Computer-mediated Parental Monitoring during Adolescence: Associations with Parental Knowledge, Substance Initiation, and Psychosocial Adjustment

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Abstract

Prevention theorists and researchers have identified parent-child relationship quality and parental monitoring (leading to parental knowledge) to be protective factors against adolescent substance initiation. In today's digital society, parents and adolescents can maintain their relationship and parental monitoring can occur using computer-mediated communication methods, such as text messaging, email, and social networking sites. Despite the widespread use of communication technology by adolescents and their parents, nothing is known about whether these technologies are being used for parental monitoring purposes, and how computer-mediated parental monitoring may be related to parental knowledge, substance initiation, and psychosocial adjustment. Study 1 was designed to overcome the limitations of single-informant designs by examining both parents' and youths' reports of in-person and computer-mediated parental monitoring (N = 56 parent-youth dyads). Using a person-centered approach, Study 2 was designed to examine clusters of parents of adolescents based on their frequency of in-person and computer-mediated monitoring (N = 289). Differences in substance initiation and psychosocial adjustment between the identified clusters were also examined.

Results of both studies revealed great variability in frequency of computer-mediated parental monitoring, with a subgroup of parents and youth reporting doing these behaviors very frequently. Results of Study 2 provide evidence that parents may be monitoring in response to their adolescent's substance initiation; the possibility of bidirectional effects of monitoring on substance initiation and psychosocial adjustment

are discussed. Findings also suggest the impact of in-person and computer-mediated parental monitoring may differ depending on the levels of parental trust/warmth and parental control within the parent-child relationship. These studies expand the edge of knowledge by examining parental monitoring in today's digital society and exploring how parents may be using technology as a tool to monitor and stay connected to their children.

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Introduction

Adolescent drug and alcohol use remains a pervasive and persistent problem with the potential for serious health and safety consequences for today's youth (National Institutes of Health, 2010). In 2011, over 70% of 9th-12th grade students had at least one drink of alcohol during their lifetime, and 21.9% had five or more drinks of alcohol within a couple hours during the past month (CDC, 2013). Over one-third (40.7%) of high school students reported ever using marijuana (CDC, 2013). In addition to the prevalence of substance use among adolescents, their psychosocial adjustment is also a concern; recent reports find that one in five adolescents has a diagnosable mental health disorder (Murphey, Barry, & Vaughn, 2013). Traditionally, positive mental health has been conceptualized as the absence of mental illness and behavioral problems; however, even if no diagnosable mental illness is present nor behavioral problems displayed, individuals may not necessarily be functioning well (Keyes, 2005). It is essential that today's youth have the skills, resources, and healthy relationships needed to thrive.

A known protective factor for youth is parents' knowledge of youths' activities, whereabouts, and associations. Previous research has demonstrated that parental monitoring, or the process of obtaining knowledge of children's daily lives, is a process involving parents' general limit-setting, solicitation of information from their children, and children's disclosure of that information (Kerr & Stattin, 2000; Stattin & Kerr, 2000). Today, parents and youth have access to communication technologies, such as text messaging and social networking websites like Facebook, that allow for computer-

mediated communication to occur while parents and children are physically separated. Despite the extensive use of these technologies among parents and youth, very little is known about how these technologies are involved in the parental monitoring process (parental solicitation and child disclosure, specifically), and whether the use of technology for parental monitoring is related to parental knowledge, youths' substance initiation, and youths' psychosocial adjustment. To better understand these relationships, the current studies aimed to describe computer-mediated parental monitoring behaviors in relation to in-person parental monitoring behaviors. Computer-mediated parental monitoring is a new behavior defined for the current studies as parents' use of technology to monitor their adolescent's whereabouts, associations, and activities and youths' use of technology to disclose information. The current studies aimed to examine differences in computer-mediated parental monitoring by important demographic characteristics and explore the association between computer-mediated parental monitoring and parental knowledge, adolescent substance initiation, and adolescent psychosocial adjustment. Knowledge of how parents and adolescents use technologies to facilitate the monitoring process has explicit implications for prevention.

Theoretical Framework

Efforts aiming to prevent problematic behaviors and promote positive youth development are excellent investment strategies for youth, families, and communities (Bogenschneider, 1996). Etiological prevention theories and research focus on the causes of problematic behaviors (Kumpfer, 1997; Nation et al., 2003) and have identified risk

and protective factors for youth within various developmental systems, particularly within the family system and parent-child interactions specifically. According to prevention theory and extensive research on parenting and parent-child relationships, parental monitoring (leading to parental knowledge) and parent-child relationship quality are known protective factors for youth (Dishion & McMahon, 1998; Kumpfer, 1999). Both parents' behavior (parental monitoring) and the emotional climate in which those behaviors occur (e.g., parent-child relationship quality) strongly influence adolescent development and outcomes (Dishion & McMahon, 1998).

Parents' monitoring behaviors and the quality of the parent-child relationship are malleable aspects within the child's environment, and as such, are appropriate factors to focus on for effective prevention strategies and approaches (Kumpfer, 1999). For example, prevention research has demonstrated the ability of prevention programs to change the trajectories of parenting behaviors (e.g., Forgatch & DeGarmo, 1999), and these positive changes in parenting are associated with positive outcomes for children. Therefore, focusing on altering parent behaviors and improving parent-child relationship quality can be effective prevention strategies. Understanding the ways in which risk and protective factors work within families allows prevention researchers, practitioners, and policymakers to develop and test various prevention strategies and approaches. Exploring parental monitoring and the role computer-mediated communication plays in the parental monitoring process is essential for informing prevention strategies and approaches.

Conceptualizing Parental Knowledge and Parental Monitoring

While several studies have found negative associations between "parental monitoring" and substance use, risky behaviors, and other maladaptive outcomes for adolescents, the vast majority of these studies conceptualized parental monitoring as parents' knowledge of their children's whereabouts and activities, and not parents' actual monitoring behaviors (Stattin & Kerr, 2000). Stattin and Kerr (2000) differentiated among various methods through which parents could obtain parental knowledge: children's voluntary disclosure of information, parental solicitation of information, and parental control. Child disclosure refers to the adolescent's willingness to provide honest information to their parents and is not necessarily considered a parental monitoring activity (Stattin & Kerr, 2000). Parental solicitation refers to parents' active efforts to obtain information from their adolescents, such as asking what happened at school that day and where their adolescent is going on a weekend evening. Parental control, as defined by Stattin and Kerr (2000), refers to parents' active efforts to control their adolescents' behaviors through the use of rules and restrictions, such as curfews and requiring permission before attending social activities. Together, parental solicitation and control describe parents' purposeful tracking and surveillance behaviors that can be considered monitoring activities. Parent behavior (solicitation of information from the adolescent and setting and enforcing limits) and adolescent behavior (disclosure of information) have been shown to account for a large amount of variance in parental knowledge (up to 50%, a substantial amount of variance for this field; Stattin & Kerr, 2000). However, research has found that parental knowledge, which was previously

assumed to result from parents' active monitoring efforts, was more strongly and consistently associated with child disclosure than with parental solicitation or parental control.

Parental knowledge, defined as parents' knowledge of their children's general whereabouts, associations, and activities, during adolescence has been studied extensively, and is a known protective factor against drug and alcohol use and other risky behaviors during adolescence (DiClemente et al., 2001; Waizenhofer, Buchanan, & Jackson-Newsom, 2004). The more parents know about their child's life, the less likely their child will use drugs and alcohol (DiClemente et al., 2001; Steinberg, 2001). Adolescents whose parents know relatively more about their day-to-day life show lower levels of drug and alcohol use, delinquency, school problems, and depressed mood (Crouter & Head, 2002). They also show higher levels of self-esteem and better school performance. Low levels of parental knowledge have been associated with high levels of adolescent problem behaviors, such as delinquency and substance initiation (Crouter & Head, 2002).

Parental Monitoring and Parent-Child Relationship Quality

In addition to parents' knowledge of their adolescent's day-to-day life, the emotional climate of the parent-child relationship (trust and warmth, in particular) has been found to be positively related to child disclosure (Kerr, Stattin, & Trost, 1999; Stattin & Kerr, 2000) and negatively related to adolescent drug and alcohol use (Steinberg, 2001). With trust in the parent-child relationship controlled, Kerr and Stattin's

analyses revealed adolescents' voluntary disclosure of information was associated with parents' greater knowledge about adolescents' whereabouts, friends, and activities. Additionally, parents' knowledge about adolescents' whereabouts, friends, and activities was associated with fewer adolescent delinquent behaviors (Kerr & Stattin, 2000; Stattin & Kerr, 2000). In contrast, adolescents whose parents obtained information by asking more questions (parental solicitation) were more likely to engage in delinquent behaviors. Research is ongoing as to how parents' monitoring influences adolescent delinquency and misconduct, but these findings demonstrate the importance of adolescents' active contributions to the monitoring process.

Based on these findings, it is reasonable to conclude that individual differences in parental knowledge are more likely to be the result of different levels of child disclosure than from differences in parents' active monitoring behaviors. Kerr and colleagues found that voluntary disclosure of information by adolescents predicted parental trust, an important component of healthy parent-adolescent relationships (Kerr et al., 1999). Other researchers have posited that if we are to understand why parental knowledge predicts positive developmental outcomes, we must understand more about why some adolescents choose to share information with their parents, while others do not, and the specific conditions under which they do so (Darling, Cumsille, Caldwell, & Dowdy, 2006).

Parental Monitoring in Today's Digital Age

Traditionally, parents solicited information from their adolescent by asking where they were going and with whom before their adolescent left the house, or asking what

their adolescent did at school that day (Stattin & Kerr, 2000), and adolescents disclosed this information in-person. As a result of widespread access to and use of computer-mediated communication technologies (Lenhart et al., 2011; Lenhart, 2012; Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013), parents can now solicit information from adolescents and adolescents can disclose information to parents using technology, such as text messaging and social networking sites like Facebook. However, previous research on parental monitoring has not distinguished the specific communication method used (in-person or computer-mediated) to obtain information nor considered the impact of communication method on parental monitoring behaviors, parental knowledge, or adolescent outcomes. Computer-mediated parental monitoring potentially represents a great improvement over traditional face-to-face parental monitoring because monitoring can happen at any time, even when parents and adolescents are not physically together. Parents can send a text message to their adolescent asking when he or she will be home, and parents can log on to Facebook and see who their adolescent's friends are. Adolescents can also keep parents' informed of their whereabouts and activities in real time, while physically separated.

Recent studies have found that on days when college students have communicated with their parents using technology, college students consumed more fruits and vegetables (14% more, on average) and were 50% more likely to engage in 30 minutes or more of physical activity (Small, Morgan, Bailey-Davis, & Maggs, 2013). Additionally, the amount of time spent communicating via technology with parents on weekend days

predicted the number of drinks consumed, binge drinking, and blood alcohol content later that evening (Small, Morgan, & Abar, 2011). These studies used within-person analyses using time diary data collected over a 14-day period. The researchers hypothesized that perhaps, communication with parents indirectly influences health behaviors by reminding children of shared values, norms, and the importance of long-term goals. Their conclusions allude to the ability of communication technology to facilitate the feeling of social presence despite parents and children being physically separated.

The concept of social presence encompasses the degree of mutual awareness, psychological involvement, mutual understanding, and behavioral engagement felt between people engaged in computer-mediated communication (Biocca, Harms, & Burgoon, 2003; Short, Williams, & Christie, 1976). Together, these studies indicate the potential of computer-mediated parent-child communication to have a protective effect for youth and the potential impact computer-mediated parental monitoring can have on parental knowledge, and youth substance initiation, and psychosocial adjustment. However, this phenomenon has not yet been studied. The use of technology specifically for parental monitoring has never been examined as a potential protective factor against risky behaviors for youth. Despite the promise technology holds for potentially increasing the effectiveness of parental monitoring, we have a limited understanding of how parents use technology for parental monitoring and specifically, whether computer-mediated parental monitoring has the potential to be an effective prevention strategy.

Parents' and Adolescents' Use of Technology

Adolescents are heavy users of technology and are among the most digitally connected and technologically savvy members of society; 95% of U.S. teens use the Internet (Lenhart et al., 2011), 75% own a smartphone, and 90% of teens with mobile phones send and receive text messages (Lenhart et al., 2015). The typical teen sends and receives at least 30 text messages each day (Lenhart et al., 2015). A recent Pew Research Center report found 92% of teens report going online daily, and 24% of teens go online "almost constantly" (Lenhart et al., 2015).

Parents of adolescents are also active technology users. Compared to the general adult population, parents of adolescents are more likely to be Internet users (87% versus 78%; Lenhart et al., 2011). The majority of parents (91%) of children ages 12-17 own cell phones and 86% report text messaging (Lenhart et al., 2011). In addition, 72% of online adults use social networking sites (Brenner & Smith, 2013), and 52% of online adults now use two or more social media sites (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015). Recent research has found that over 90% of parents of adolescents reported using text message and almost three-quarters reported using social networking sites to communicate with their children (Rudi, Dworkin, Walker, & Doty, 2015).

Despite these statistics, little is known about how parents and adolescents use technology to communicate with each other. Minimal research exists on adolescents' technology use within family contexts (Brown & Bobkowski, 2011; Hofferth & Moon, 2011). Of research that does exist, most focuses on parental monitoring specifically of adolescents' online activity without attention to how technologies might be used to

maintain relationships or stay connected (Lenhart, 2012; Rogers, Taylor, Cunning, Jones, & Taylor, 2006).

Implications of Parental Monitoring and Knowledge on Adolescent Outcomes

Substance Initiation

Substance use during adolescence is associated with several short- and long-term health and social outcomes (NIDA, 2012). Fatalities involving alcohol consumption are responsible for over 5,000 adolescent deaths each year, all of which are preventable and include vehicle accidents, suicides, and other accidents and injuries (Hingson & Kenkel, 2004). Substance use during adolescence also predicts substance use problems and negative outcomes in emerging adulthood and adulthood (Grant et al., 2004; Gunzerath, Faden, Zakhari, & Warren, 2004; Schulenberg, Maggs, & O'Malley, 2003). By better understanding the impact of computer-mediated parental monitoring on these outcomes, the field can begin to develop effective monitoring strategies for parents and youth in today's digital age.

Internalizing, Externalizing, and Prosocial Behavior

Child and adolescent psychosocial adjustment outcomes have traditionally been categorized into two broad constructs: internalizing and externalizing problems (Zahn-Waxler, Klimes-Dougan, & Slattery, 2002). Internalizing symptoms generally refer to depression and anxiety, and include sad or low mood, fatigue, problems with sleep and appetite, feelings of guilt and worthlessness, poor concentration, and suicidal ideation. Research has shown a sharp increase in depressive symptoms during adolescence

(Peterson et al., 1993). Research has also found parental knowledge is negatively associated with adolescent depressive symptoms (Hamza & Willoughby, 2011).

Externalizing problems are characterized by behaviors that are harmful and disruptive to others, including bullying or threatening other people, lying, and stealing. Longitudinal studies of child and adolescent externalizing behaviors have found these behaviors can be persistent and lead to adverse outcomes in adulthood (Fergusson, Horwood, & Ridder, 2005; Jessor et al., 2003). Extensive research demonstrates that externalizing symptoms are influenced by children's experiences in their families, and particularly children's interactions with their parents (Patterson, 1982). Specifically, hostile parenting and inconsistent discipline increase the likelihood of externalizing problems, while warm parent-child relationships and consistent, appropriate discipline practices reduce the likelihood of these problems in adolescence (Ge, Conger, Simons, & Best, 1996). Research also consistently finds parental monitoring to be associated with decreased delinquency in adolescence (e.g., Pettit, Laird, Dodge, Bates, & Criss, 2001). Lack of child disclosure has been found to be the strongest and most consistent predictor of delinquent behavior (Stattin & Kerr, 2000). Research has also found that more delinquent behavior is associated with less disclosure. Recent longitudinal studies have also found that more child disclosure, but not more solicitation or control, is associated with less delinquent behavior (Keijsers, Branje, VanderValk, & Meeus, 2010; Kerr, Stattin, & Burk, 2010). It is important to examine adolescents' externalizing behaviors in addition to adolescent substance initiation, as adolescents who are not using substances

may still exhibit externalizing behaviors such as lying or stealing, and these behaviors may be a threat to thriving.

Prosocial behaviors are those intended to benefit others and include concerns for the needs and welfare of others and helping or getting along with others. In addition to examining associations between parent-child relationships, parental monitoring, and internalizing and externalizing, prosocial behaviors were included in the current studies because low levels of internalizing and externalizing do not necessarily indicate positive development or thriving; prosocial behaviors are an indicator of thriving and positive development among youth (Dowling, Gestsdottir, Anderson, von Eye, & Lerner, 2003). Researchers have shown relatively consistent associations between trust and warmth within the parent-child relationship and prosocial behaviors in adolescence (Dekovic & Jaansens, 1992; Flannery, Montemayor, Eberly, & Torquati, 1993; Laible & Carlo, 2004; Lamborn, Mounts, Steinberg, & Dornbusch, 1991).

Significance of the Current Studies

The studies that follow extend previous findings on technology use within the parent-adolescent relationship by overcoming four noteworthy limitations of the field. First, the measures used in the current study specifically address the use of technology for parental solicitation and child disclosure, greatly improving upon existing research which has broadly considered frequency and methods of communication in general or technology use outside of the parent-adolescent relationship. In addition, in Study 1, youth reported on perceptions of parental knowledge for each parent separately,

expanding upon the majority of existing research that has examined how much *parents* generally know about their child's activities, associations, and whereabouts. Third, Study 1 overcomes the limitation of single informant designs by including information reported by parents and youth in the same family. Lastly, Study 2 takes an integrative and person-centered approach to studying in-person and computer-mediated parental monitoring by identifying common and distinct subgroups of parents based on frequency of in-person and computer-mediated child disclosure and parental solicitation.

Study 1

A significant limitation in the field of technology use in the family context is the overwhelming use of single-informant study designs. Research based on single informants, either parents only or youth only, limits our understanding of communication processes within the parent-child relationship and provides incomplete information about family dynamics. To begin to overcome this limitation, Study 1 aimed to describe computer-mediated parental monitoring and explore associations between child disclosure, parental solicitation, parental knowledge, substance initiation, and youths' psychosocial adjustment using a sample of matched parent-youth dyads (N = 56 dyads). Examining both parents' and youths' reports of these behaviors and outcomes provides a more accurate and complete picture of communication processes and youth wellbeing above what information from one member of this dyad can provide.

Research Questions

Research Question 1a: How frequently do youth and parents report in-person and computer-mediated parental monitoring (parental solicitation and child disclosure)?

Research Question 1b: Do youths' and parents' reports of in-person and computer-mediated parental monitoring differ?

Research Question 2: Does computer-mediated parental monitoring account for a significant amount of variance in parental knowledge above and beyond gender composition of the dyad (e.g., son-mother, daughter-father), parental trust/warmth, parental control, and in-person child disclosure and in-person parental solicitation?

Research Question 3: Are there significant differences in youths' and parents' reports of in-person and computer-mediated parental monitoring, parental trust/warmth and parental control, parental knowledge, and youth psychosocial adjustment between youth who reported substance initiation and youth who did not?

Methodology

Data Collection

Parents of high school and college students were recruited to participate in an online survey through Facebook and Amazon Mechanical Turk (MTurk). The survey was administered using Qualtrics, an online survey tool optimized for use on mobile devices such as smartphones and tablets, increasing accessibility for parents who do not own desktop computers or laptops. Upon completing the online survey, parents could enter their email address into a drawing for an iPad mini and one of two $100 Amazon.com gift cards. The University of Minnesota IRB approved study procedures for this research.

Recruitment through Facebook. Facebook's Advertising Program (Facebook; https://www.facebook.com/advertising) allows researchers to develop advertisements that are distributed to targeted demographics within the Facebook community, a population that includes over one billion people worldwide (Facebook Newsroom). Once purchased, the ads subsequently appear in potential subjects' "News Feeds" or on the right side of user's Facebook page, and a click on the advertisement redirects the user to an external website that hosts the survey. Researchers can choose to be charged by the number of clicks on a given advertisement (cost per click, CPC), or by the number of times the

advertisement displays on a user's page (cost per impression, CPI; Samuels & Zucco, 2013). Previous research on Facebook advertisements has shown them to be successful at collecting a representative sample, as well as cost effective, often costing less than half the price of recruitment through traditional print methods (Lohse & Wamboldt, 2013). Facebook advertisements targeting diverse parents of high school and college students were posted on Facebook from mid-April 2014 to early June 2014, resulting in seven of the parents included in the current study.

Recruitment through Amazon Mechanical Turk. Amazon's Mechanical Turk (MTurk; www.MTurk.com) is an open online marketplace for labor recruitment, compensation, and data collection. Individuals looking for workers register as "requesters", and individuals who are looking for work register as "workers" (paid task completers). Requesters post any task that can be done at a computer that requires human intelligence, including taking surveys. Workers can browse available tasks and are paid upon successful completion of each task. Previous research has shown MTurk to be a viable, cost-effective method for obtaining large samples to participate in self-report questionnaire research (Buhrmester, Kwang, & Gosling, 2011). Research comparing MTurk samples to standard Internet samples has shown that MTurk samples are slightly more diverse in age, geographic location, and race and ethnicity (Buhrmester et al., 2011). Two rounds of data were collected via MTurk.

Youth were recruited to participate in the research project via invitations from their parent who participated in the study. After parents entered their email address for

the iPad mini and Amazon.com gift card drawing, a message appeared encouraging the parent to paste text about the online survey and the survey link into an email to their child. This information was also included in the consent form, and in the description of the study as posted on MTurk.

Participants

Youth who completed the online survey were matched to parents using a variety of strategies. First, parents and youth were matched by their responses to a question about the last five digits of the parent's phone number. Second, remaining unmatched parents and unmatched youth were matched using respondents' IP address information collected by Qualtrics. Third, parents and youth were matched by latitude and longitude coordinates also collected by Qualtrics. Throughout this matching process, parent and child report of child age and gender, and state were checked to validate the matches. Lastly, any unmatched youth were compared to remaining unmatched parents to search for potential matches based on age and gender of child, state of residence, and parents' marital status. This process resulted in a total of 105 parent-child dyads; this number includes parents matched to children in college, and parents and youth living outside of the United States. Included in the current study are parent-child dyads in which both parent and child currently reside in the United States ($N = 56$ dyads).

Almost half of youth were female (46.4%), and 75% of parents were female. The majority of youth were White (66.1%), and 69.6% of parents were White (see Table 1 for complete demographic information about dyads).

Survey Development

Measures (described below) were identified through extensive literature searches on parents' and youths' use of technology, parent-child relationship quality, parental monitoring, substance use, and psychosocial adjustment. Several of the measures included in the online survey use slider bars, a type of graphic rating scale, with verbal descriptors along the slider line (see Appendix I and II for youth and parent surveys, respectively). Graphic rating scales provide an advantage over the use of discrete measurement scales using radio buttons or numbers. Using sliders allows respondents to be more precise in how they answer questions by allowing options in between scale options (for example, parents could choose to place the slider between "rarely" and "sometimes", rather than having to choose between the two options). In studies of mood measurement, graphic rating scales have been shown to possess high reliability and validity (Ahearn, 1997; Cook, Heath, & Thompson, 2001).

Due to concerns about parent participants recruited through MTurk not paying careful attention while completing the survey, three attention check items were spread throughout the parent survey. For example, one attention check item was, "To demonstrate that you are reading the questions, please select Yes below." The majority of participants answered all three attention checks correctly (82.14%), 16.1% missed one attention check, and one parent missed two attention checks (1.8%). Given the high rates of correct answers to attention check items among parents, no dyads were deleted from the sample based on attention check responses.

The next section describes parent and youth measures; parents and youth reported on the same constructs.

Measures

Demographic characteristics. Parents and youth provided extensive demographic information, including age, gender, geographic area, and race/ethnicity (see Table 1).

Child disclosure. Youth were asked how often they tell the parent who referred them to participate in the study about different topics in-person and using technology by responding to six total items (Kerr & Stattin, 2000; Kerr et al., 2010); three items asked about in-person child disclosure and three items asked about child disclosure using technology. Sample items included, "How often do you initiate a conversation with this parent about school (relationships with teachers, assignments, etc.)?" and "If you are out at night, do you tell this parent what you have done that evening?" The slider labels were the same for the in-person slider and the using technology slider: 0-1 = *Almost never*, 1-2 *Rarely*, 2-3 *Sometimes*, 3-4 *Often*, 4-5 *Almost always.* Parents answered the same questions about how often their child discloses information in-person and using technology.

One scale for in-person child disclosure was created by computing the mean score across the items measuring in-person child disclosure (youth report $\alpha = .68$; parent report $\alpha = .67$), and a separate scale for child disclosure using technology was created by

computing the mean score across items measuring child disclosure using technology (youth report α = .86; parent report α = .88).

Parental solicitation. Youth reported how often the parent who referred them to complete this survey solicits information about different topics from them using ten total questions (Kerr & Stattin, 2000; Kerr et al., 2010); five items asked about in-person parental solicitation and five items asked about parental solicitation using technology. The slider labels were the same for the in-person slider and the using technology slider: 0-1 = *Almost never*, 1-2 *Rarely*, 2-3 *Sometimes*, 3-4 *Often*, 4-5 *Almost always.* Sample items included, "During the past month, how often has this parent started a conversation with you about your free time?" and "How often does this parent ask you about things that happened during a normal day?" Parents answered the same questions about how often they solicit information from their child.

A scale for in-person parental solicitation was created by computing the mean score across the five items about in-person parental solicitation (youth report α = .85; parent report α = .77) and a scale for parental solicitation using technology was created by computing the mean score across the five items about parental solicitation using technology (youth report α = .87; parent report α = .89).

Parental trust/warmth. Youth reported on trust and warmth in their relationships with their parents using 16 total questions; eight questions asked about their mother and eight questions asked about their father. The eight items asked about each parent were a combination of the trust subscale from the Inventory of Parent and Peer Attachment

(IPPA; Armsden & Greenberg; 1987; Greenberg & Armsden, 2009) and items from the Parental Acceptance-Rejection Questionnaire (PARQ; Rohner, 2001). The IPPA and the PARQ have demonstrated adequate reliability and validity in diverse U.S. and international studies (Greenberg & Armsden, 2009; Khaleque & Rohner, 2002). Sample items included, "I trust my mother" and "When we discuss things, my father cares about my point of view". Response options were 1 = *Almost never or never true*, 2 = *Not very often true*, 3 = *Sometime true,* 4 = *Often true*, and 5 = *Almost always or always true.* Parents answered the same eight items about their relationship with their child who participated in the study.

A scale for parental trust/warmth was created by computing the mean score across the eight items (youth report $\alpha = .95$; parent report $\alpha = .82$). Analyses involving parent-child dyad used the appropriate parental trust/warmth scale depending on the gender of the paired parent (if the parent who participated was a father, paternal trust/warmth was included in analyses; if the parent who participated was a mother, maternal trust/warmth was included in analyses).

Parental control. Youth reported how often the parent who referred them to complete the survey controls what the youth can do without telling that parent using five items (Kerr & Stattin, 2000; Kerr et al., 2010). The slider labels were 0-1 *Almost never*, 1-2 *Rarely*, 2-3 *Sometimes*, 3-4 *Often*, 4-5 *Almost always*. Sample items included, "Do you have to ask this parent before you can decide with your friends what you will do on a Saturday evening?" and "Do you need to have this parent's permission to stay out late on

a weekday evening?" Parents answered the same questions about their rules for their child who participated in the study. A scale for parental control was created by computing the mean score across the five items (youth report $\alpha = .96$; parent report $\alpha = .91$).

Parental knowledge. Youth reported how much each parent knows about their whereabouts, associations, and activities using 16 total questions (Kerr & Stattin, 2000; Kerr et al., 2010); eight questions asked about how much their mother knows and eight questions asked about how much their father knows. Sample items included, "How often does your mother know which friends you hang out with during your free time?" and "How often has this parent had no idea of where you were at night?" The slider labels were 0-1 *Almost never*, 1-2 *Rarely*, 2-3 *Sometimes*, 3-4 *Often*, 4-5 *Almost always.* Parents answered the same questions about how much they know about their child who completed the survey.

A scale for parental knowledge was created by computing the mean score across the eight items (youth report $\alpha = .88$; parent report $\alpha = .87$). Analyses involving parent-child dyad used the appropriate parental knowledge scale depending on the gender of the paired parent (if the parent who participated was a father, paternal knowledge was included in analyses; if the parent who participated was a mother, maternal knowledge was included in analyses).

Substance initiation. Adolescents reported on their cigarette, e-cigarette, alcohol, marijuana, and other illegal drug use using five items from the National Youth Risk Behaviors Survey (YRBS; Kann et al., 2013).

Cigarettes. Youth reported on cigarette initiation using one item that asked about age when the adolescent smoked a whole cigarette for the first time. Response options for age ranged from never, then eight years old to 22 years old at one-year increments (see Appendix I). This item was recoded to create one never/ever variable for cigarette initiation; adolescents who responded "Never" were recoded as having not initiated cigarette use, and adolescents who responded that they smoked a whole cigarette at any age were recoded as having initiated cigarette use. Parents answered the same question about their child's cigarette use.

E-cigarettes. Youth reported e-cigarette initiation using one item that asked whether the youth had ever smoked an e-cigarette (electronic cigarette). Response options were *Yes* and *No*. Parents answered the same question about their child's e-cigarette use.

Alcohol. Youth reported alcohol initiation using one item that asked, "During your life, on how many days have you had at least one drink of alcohol?" Response options were 0 = *0 days*, 1 = *1 or 2 days*, 2 = *3 to 9 days*, 3 = *10 to 19 days*, 4 = *20 to 39 days,* 5 = *40 to 99 days,* and 6 = *100 or more days*. This item was recoded to create one never/ever variable for alcohol initiation; adolescents who responded "0 days" were recoded as having not initiated alcohol use, and adolescents who responded "1 or 2 days"

or more frequently were recoded as having initiated alcohol use. Parents answered the same question about their child's alcohol use.

Marijuana. Youth reported marijuana initiation using one item that asked, "During your life, how many times have you used marijuana?" Response options were 0 = *0 days*, 1 = *1 or 2 days*, 2 = *3 to 9 days*, 3 = *10 to 19 days*, 4 = *20 to 39 days,* 5 = *40 to 99 days,* and 6 = *100 or more days*. This item was recoded to create one never/ever variable for marijuana initiation; adolescents who responded "0 days" were recoded as having not initiated marijuana use, and adolescents who responded "1 or 2 days" or more frequently were recoded as having initiated marijuana use. Parents answered the same question about their child who participated in the study.

Other illegal drugs or prescription drug misuse. Youth reported other illegal drug initiation using one item that asked, "During your life, how many times have you tried other illegal drugs (e.g., Ecstasy, Cocaine, etc.) or mis-used prescription drugs (e.g., Adderall, Vicodin, Percocet)?" Response options were 0 = *0 days*, 1 = *1 or 2 days*, 2 = *3 to 9 days*, 3 = *10 to 19 days*, 4 = *20 to 39 days,* 5 = *40 to 99 days,* and 6 = *100 or more days*). This item was recoded to create one never/ever variable for other illegal drug initiation; adolescents who responded "0 days" were recoded as having not initiated other illegal drug use, and adolescents who responded "1 or 2 days" or more frequently were recoded as having initiated other illegal drug use. Parents answered the same question about their child who participated in the study.

Psychosocial adjustment. Youth reported on their psychosocial adjustment using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997; 2001), a widely used brief questionnaire with five hypothesized subscales. These subscales relate to emotional problems, peer problems, behavioral problems, hyperactivity, and prosocial behaviors (Goodman, 1997). The five subscales each comprise 5 items, and response options were 1 = *Not true*, 2 = *Somewhat true*, and 3 = *Certainly true*. Parents also completed the SDQ about their child using the same questions.

While exploratory factor analyses have supported the five subscales in multiple contexts, confirmatory factor analyses provide mixed support for the SDQs five factor structure. One alternative based on theoretical grounds suggests combining the emotional and peer items into an "internalizing" subscale and the behavioral and hyperactivity items into an "externalizing" subscale, and keeping the original scale assessing prosocial behaviors the same (Goodman, Lamping, & Ploubidis, 2010). Using data from 18,222 British children, parents, and teachers, a recent study demonstrated construct validity for a three-factor solution: internalizing, externalizing, and prosocial behaviors (Goodman et al., 2010). The authors provide evidence that for high-risk samples, the original five-factor SDQ may be more appropriate; however, for low-risk samples, such as in the current study, the three-factor solution is more appropriate.

For the current study, the alternative three-factor model supported by Goodman and colleagues (2010) was used as it is a non-clinical sample (youth report: internalizing

α = .87 ; externalizing α = .81; prosocial α = .80; parent report: internalizing α = .85; externalizing α = .80; prosocial α = .75).

Data Analysis Plan

Research Questions 1a-1b. To answer research question 1a, how frequently do adolescents and parents report in-person and computer-mediated parental monitoring (child disclosure and parental solicitation), frequency and descriptive analyses were computed. To answer research question 1b, do adolescents' and parents' reports of in-person and computer-mediated parental monitoring differ, paired samples *t*-tests were computed. The magnitude of the differences, or the effect size, will be reported using Cohen's *d* (Cohen, 1988).

Research Question 2. To answer the second research question, does computer-mediated parental monitoring account for a significant amount of variance in parental knowledge above and beyond gender composition of the dyad, parental trust/warmth, parental control, and in-person child disclosure and in-person parental solicitation, two hierarchical, cross-informant regression analyses were computed. One model included youths' report of independent variables with parents' report of parental knowledge as the dependent variable, and the second model included parents' report of independent variables with youths' report of parental knowledge as the dependent variable. Both cross-informant regressions included gender composition of the dyad, parental trust/warmth, parental control, in-person child disclosure, and in-person parental

solicitation in the first step. The second step included computer-mediated child disclosure and computer-mediated parental solicitation.

Although stronger associations may be found in data from single informants, cross-informant analyses examining the effects of one informant's report on another's (in this case, youths' report of independent variables on parents' report of parental knowledge, and parents' report of independent variables on youths' report of parental knowledge), offer broader generalizability and greater theoretical significance than findings from one informant (Achenbach, Howell, McConaughy, & Stanger, 1995). By incorporating reports from multiple informants, parent and youth behaviors and perceptions can be more accurately and reliably determined (Achenbach, McConaughy, & Howell, 1987).

Gender composition of parent-child dyads has been associated with child disclosure, parental solicitation, and parental knowledge (Crouter & Head, 2002; Waizenhofer et al., 2004), and therefore was included as a control variable in both models. Power analyses were computed to determine whether the sample size allowed for sufficient power to detect a medium effect size for step 2 of the model. Results showed that to find a medium effect size for the second step of the hierarchical multiple regression model (Cohen's $f^2 = .20$) with a desired statistical power level of .80, a sample size of 56 was required. Despite the small sample size of the current study, this provides evidence that there was still sufficient power to detect a medium effect size.

Research Question 3. To answer the third research question, are there differences in parental trust/warmth, parental control, parental knowledge, in-person parental monitoring, and computer-mediated parental monitoring between youth who reported substance initiation and those who did not, independent samples *t*-tests were computed comparing the two groups. Given the small proportion of youth who reported ever using e-cigarettes and other illegal drugs, only cigarette use, alcohol use, and marijuana use were examined.

Preliminary Data Analysis

Missing data. There was very little missing data on key study variables, ranging from zero cases missing data to four (7.1% of the sample) cases missing data (only three variables were missing data for more than 2 cases). There were no significant patterns of missing data revealed in the missing value analysis computed in SPSS, and no differences in demographic characteristics of parents and youth missing data for at least one variable and parents and youth missing no data for any study variables. Therefore, expectation maximization imputation was used to impute missing data for key study variables.

Results

Research Question 1a: Frequency of In-person and Computer-mediated Parental Monitoring

On average, youth and parents reported that the youth disclosed information in person "often" ($M = 3.73$ and $M = 3.95$, respectively; see Table 2). Twenty-three youth (41.07%) and 31 parents (55.36%) reported that the youth "almost always" disclosed

information in person; 20 youth (35.71%) and 19 parents (33.93%) reported that the youth "often" disclosed information in person; 11 youth (19.64%) and five parents (8.93%) reported that the youth "sometimes" disclosed information in person; and two youth (3.57%) and one parent (1.79%) reported that the youth "rarely" disclosed information in person. None of the participants, youth or parent, reported that the youth "almost never" disclosed information in person.

On average, youth and parents reported that the youth disclosed information using technology "sometimes" (M = 2.45 and M = 3.29, respectively; see Table 2). Nine youth (16.07%) and eight parents (14.29%) reported that the youth "almost always" disclosed information using technology; 11 youth (19.64%) and 15 parents (26.79%) reported that the youth "often" disclosed information using technology; 16 youth (28.57%) and nine parents (16.07%) reported that the youth "sometimes" disclosed information using technology; 10 youth (17.86%) and 14 parents reported that the youth "rarely" disclosed information using technology; and 10 youth (17.86%) and 10 parents (17.86%) reported that the youth "almost never" disclosed information using technology.

On average, youth and parents reported that the parent solicited information in person "often" (M = 3.29 and M = 3.48, respectively; see Table 2). Sixteen youth (28.57%) and 13 parents (23.21%) reported that the parent "almost always" solicited information in person; 22 youth (39.29%) and 31 parents (55.36%) reported that the parent "often" solicited information in person; 10 youth (17.86%) and 10 parents (17.86%) reported that the parent "sometimes" solicited information in person; seven

youth (12.50%) and two parents (3.57%) reported that the parent "rarely" solicited information in person; and one youth (1.79%) reported that the parent "almost never" solicited information in person.

On average, youth and parents reported that the parent solicited information using technology "rarely" (M = 1.98 and M = 1.87, respectively; see Table 2). Four youth (7.14%) and five parents (8.92%) reported that the parent "almost always" solicited information using technology; six youth (10.71%) and seven parents (12.50%) reported that the parent "often" solicited information using technology; 15 youth (26.79%) and 11 parents (19.64%) reported that the parent "sometimes" solicited information using technology; 19 youth (33.93%) and 17 parents (30.36%) reported that the parent "rarely" solicited information using technology; and 12 youth (21.43%) and 16 parents (28.57%) reported that the parent "almost never" solicited information using technology.

Research Question 1b: Differences in Youths' and Parents' Report of In-person and Computer-mediated Parental Monitoring

Results of paired-samples t-tests revealed no significant differences between youths' report and parents' report of frequency of in-person and computer-mediated parental monitoring (see Table 4). Parents reported higher levels of parental knowledge (M = 4.00) compared to youths' report of parental knowledge (M = 3.47), t (55) = 3.43, p = .001; the effect size for this difference was moderate (Cohen's d = 0.50). Results also showed significant differences in reports of youth internalizing and externalizing. Youth reported higher levels of internalizing (M = 15.95) than parents (M = 14.05), t (55) =

3.96, $p < .001$; the effect size for this difference was moderate (Cohen's $d = 0.43$). Youth also reported higher levels of externalizing ($M = 15.66$) than parents ($M = 13.66$), $t(55) = 3.77$; the effect size for this difference was also moderate (Cohen's $d = 0.53$).

Research Question 2: Variance in Parental Knowledge accounted for by Computer-mediated Parental Monitoring

The overall model with youths' report of parental knowledge as the dependent variable including both steps was significant, $F(7, 48) = 3.66$, $p = .003$ (see Table 5). Independent variables included in the first step of the model accounted for 34% of the variance in youths' report of parental knowledge; parents' report of in-person parental solicitation was the only statistically significant independent variable. The second step of the model accounted for only 1% of the variance and was not statistically significant.

The overall model with parents' report of parental knowledge as the dependent variable including both steps was significant, $F(7, 46) = 2.90$, $p = .014$ (see Table 6). Independent variables included in the first step of the model accounted for 25% of the variance in parents' report of parental knowledge; youths' report of in-person child disclosure was the only significant independent variable. While the second step of the model accounted for 6% of the variance in parents' report of parental knowledge, the additional variance accounted for was not statistically significant. Both youths' report of computer-mediated child disclosure and youths' report of computer-mediated parental solicitation approached significance ($p = .08$ and .07, respectively). Youth who reported that they disclosed information using technology more frequently had parents who

reported higher levels of parental knowledge. Conversely, youth who reported that their parent solicited information using technology more frequently had parents who reported lower levels of parental knowledge.

Research Question 3: Differences in Study Variables by Youth Substance Initiation

Table 7 shows the proportion of youth and the proportion of parents who reported youth substance initiation. On average, more youth reported substance initiation compared to the parent report of their child's substance initiation.

Cigarette use. Results revealed that youth who had initiated cigarette use reported less frequent in-person child disclosure ($M = 3.16$) compared to youth who reported not initiating cigarette use ($M = 4.02$; see Table 8); the effect size for this difference was large (Cohen's $d > 1.00$). Youth who had initiated cigarette use also reported lower levels of parental control ($M = 3.01$) compared to youth who reported not initiating cigarette use ($M = 3.85$); the effect size for this difference was moderate (Cohen's $d = 0.59$). Youth who had initiated cigarette use reported lower levels of parental knowledge ($M = 2.73$) compared to youth who reporting not initiating cigarette use ($M = 3.85$); the effect size for this difference was large (Cohen's $d = 0.93$). Youth who had initiated cigarette use also reported higher levels of externalizing ($M = 17.52$) compared to youth who reported not initiating cigarette use ($M = 14.70$); the effect size for this difference was large (Cohen's $d = 0.74$). No significant differences were found for computer-mediated child disclosure, in-person or computer-mediated parental solicitation, parental trust/warmth, internalizing, or prosocial behaviors.

Results also revealed that youth who had initiated cigarette use had parents who reported lower levels of parental control (M = 3.31) compared to youth who reported not initiating cigarette use (M = 4.13); the effect size for this difference was moderate (Cohen's d = 0.63). Results revealed that youth who had initiated cigarette use had parents who reported lower levels of parental knowledge (M = 3.64) compared to youth who reported not initiating cigarette use (M = 4.19); the effect size for this difference was moderate to large (Cohen's d = 0.70).

Alcohol use. Results revealed that youth who had initiated alcohol use reported less frequent in-person child disclosure (M = 3.47) compared to youth who reported not initiating alcohol use (M = 4.04; see Table 8); the effect size for this difference was moderate (Cohen's d = 0.63). Results also revealed that youth who had initiated alcohol use reported lower levels of parental knowledge (M = 3.28) compared to youth who reported not initiating alcohol use (M = 4.01); the effect size for this difference was moderate to large (Cohen's d = 0.72).

Results also revealed that youth who had initiated alcohol use had parents who reported less frequent in-person parental solicitation (M = 3.29) compared to youth who reported not initiating alcohol use (M = 3.76; see Table 8); the effect size for this difference was moderate (Cohen's d = 0.56). Youth who had initiated alcohol use had parents who reported lower levels of parental knowledge (M = 3.75) compared to youth who reported not initiating alcohol use (M = 4.36); the effect size for this difference was large (Cohen's d = 0.89).

Marijuana use. Results revealed that youth who had initiated marijuana use reported lower levels of in-person child disclosure ($M = 3.21$) compared to youth who reported not initiating marijuana use ($M = 3.99$; see Table 9); the effect size for this difference was large (Cohen's $d = 0.91$). Results also revealed that youth who had initiated marijuana use reported lower levels of parental knowledge ($M = 2.78$) compared to youth who reported not initiating marijuana use ($M = 3.83$); the effect size for this difference was large (Cohen's $d = 0.88$). No differences were found between youth who had initiated marijuana use and youth who had not on parents' report of study variables.

Discussion

Study 1 aimed to explore and describe new behaviors in today's digital age among youth and their parents, computer-mediated child disclosure and computer-mediated parental solicitation. Extensive research has demonstrated the importance of parental knowledge of adolescents' whereabouts, associations, and activities as it relates to adolescents' substance initiation and delinquent behaviors (Crouter & Head, 2002; Steinberg, 2001). As such, extensive research has been conducted on how parents obtain knowledge about their adolescent's life, and has examined children's voluntary disclosure of information, parents' explicit solicitation of information from their child, and parents' general rule setting about disclosing information and asking permission about making plans. In addition to these behaviors occurring face-to-face, these behaviors can now occur in computer-mediated mediums, including via text message, email, Skype and FaceTime, and through the use of social networking sites. Information about how the

use of technology may be a strategy for parents to obtain parental knowledge has direct implications for preventing youth substance initiation and promoting positive youth development.

In the current study, youth and parents reported using technology for parental monitoring with relative frequency, and a subgroup of youth and parents reported doing these behaviors often or almost always. While there was great variability in the frequency with which youth and parents reported using technology to disclose information to parents or ask for information from youth, the evidence that these behaviors are happening with relative frequency for most youth and parents warrants attention and future research (less than one-fifth of youth and parents reported that the child almost never disclosed information using technology, and about one-fourth reported that the parent almost never solicited information using technology). Given previous research findings about the importance of monitoring and the contributing factors to how parents obtain knowledge about their child's life, it is important to consider this new, additional way that parents and youth can use technology as a tool to share information with each other and stay connected.

Parents' report of in-person parental solicitation was positively associated with youths' report of parental knowledge, while youths' report of in-person child disclosure was positively associated with parent report of parental knowledge. These findings are particularly striking given the small sample size and the use of a cross-informant design. Taken together, these results provide further evidence that in-person communication

remains an important aspect of parent-child relationships despite widespread use of technology. Given the lack of significant findings about computer-mediated child disclosure and parental solicitation, findings suggest that parents still primarily obtain information about their youth via in-person communication. These findings provide evidence that in-person child disclosure and parental solicitation each uniquely contribute to each dyad members' perceptions of parental knowledge. The vast majority of research on parental monitoring finds child disclosure to be the most important factor contributing to parental knowledge, but these findings suggest that both behaviors are important.

While previous research has found child disclosure to be the primary contributor to parental knowledge (Kerr & Stattin, 2000; Stattin & Kerr, 2000), the current study found parents' report of in-person parental solicitation to be the sole (statistically significant) independent variable accounting for a significant amount of variance in youths' report of parental knowledge. The cross-informant design of the analyses suggests that parental solicitation is important as it relates to youths' perceptions of how much their parents know about the youth's daily life. When parents report asking for information about how their day went or what school assignments they are working on this significantly contributes to youths' perceptions of parental knowledge and thus potentially acts as a protective factor for youth.

Though results were not statistically significant, youths' report of computer-mediated child disclosure and computer-mediated parental solicitation accounted for 6% of the variance in parent report of parental knowledge ($p < .10$ for each variable). It is

important to note that the sign of the betas for computer-mediated child disclosure and computer-mediated parental solicitation were opposite: youths' report of computer-mediated child disclosure was positively associated with parents' report of parental knowledge, and youths' report of computer-mediated parental solicitation was negatively associated with parents' report of parental knowledge. This suggests that consistent with previous research about child disclosure being strongly associated with parental knowledge (Kerr & Stattin, 2000; Stattin & Kerr, 2000), computer-mediated child disclosure may also lead to increased levels of parental knowledge. In contrast, youth perceptions of the frequency of computer-mediated parental solicitation may not be what leads to parental knowledge. It could be that parents' computer-mediated solicitation of information as it contributes to parental knowledge depends on the emotional climate in which parents are soliciting information from their child. In a warm, trusting relationship, asking for information via technology may be seen as a loving and caring behavior that youth respond to positively, while in a less warm, less trusting relationship, this behavior may be seen as an intrusive violation of privacy (Padilla-Walker, Nelson, Madsen, & Barry, 2008).

Alternatively, it could be that parents are not soliciting information via technology in the same ways. Some research suggests that when parents and college students communicate for the purpose of checking in or to make plans, phone calling and text messaging are used frequently (Connell & Dworkin, 2012). However, when parents and youth want to communicate about more serious or important topics, such as talking when

upset, parents and college students communicate face-to-face (Connell & Dworkin, 2012). Perhaps when parents really want important information, they ask their child in person, and technology is just a tool used for checking in about routines or schedules. Maybe parents selectively solicit particular information via technology, and this more routine or less important information does not contribute to parents' overall knowledge about who their child's friends are or what activities they are participating in while away from home.

Youth who had initiated cigarette, alcohol, and marijuana reported less frequent in-person child disclosure and lower levels of parental knowledge compared to youth who reported not initiating substance use. This mirrors what previous research has found, confirms the importance of child disclosure as a contributor to parental knowledge, and provides further evidence for parental knowledge being a protective factor for youth. Both youth who reported initiating cigarette use and their parents reported lower levels of parental control compared to youth who did not report initiating cigarette use. This is a strong finding given that differences were found for both youth and parent report of parental control. However, no significant differences in parental control were found for initiation of any other substance. This finding suggests that parents' rule setting about their child asking for permission and disclosing information is perhaps a unique protective factor against cigarette use; parental control may operate differently for prevention of different substances.

Though hypothesized as a potential protective factor, frequency of computer-mediated child disclosure and frequency of computer-mediated parental solicitation were reported similarly between youth who initiated substances and youth who did not. This suggests that parental monitoring using technology may not necessarily be an effective prevention strategy against substance use. Perhaps technology use within the parent-child relationship serves a different purpose other than monitoring, or that parents are using technology for monitoring in different ways. It could be that varying levels of parental trust/warmth and parental control play a role in the relationship between computer-mediated parental monitoring and substance initiation. Perhaps computer-mediated parental monitoring in a warm, trusting parent-child relationship is protective for youth and perpetuates positive parent-child relationships, while this same behavior in a less warm, less trusting parent-child relationship exacerbates conflict that occurs in person.

While previous research has revealed that youth and their parents tend to differ in reports of parental monitoring behaviors (De Los Reyes, Goodman, Kliewer, Reid-Quinones, 2010), the present study found that parents and youth did not differ in their reports of frequency of in-person parental monitoring behaviors nor frequency of computer-mediated parental monitoring behaviors. However, on average, youth reported lower levels of parental knowledge than parents. It could be that parents overestimate what they know about their adolescent's life, or it could be that adolescents, who are asserting their autonomy within the parent-child relationship, do not want their parents to know everything about their whereabouts, activities, and associations. Youth reported

higher levels of internalizing and externalizing compared to their parents. Perhaps this is evidence of the influence of social desirability on parents' reports of their child's functioning (e.g., Grills & Ollendick, 2003), or maybe parents do not know as much about their child's functioning, which is also consistent with youth reporting lower levels of parental knowledge in general.

Limitations and Future Directions

Though this study begins to overcome some of the barriers to generating knowledge about parental monitoring in today's digital world, it is not without limitations. The sample size for this study was small, and there was not enough power to detect smaller effect sizes that may exist in the population. While the majority of the youth in the sample were adolescents (73% between 13-18 years old), just over one-quarter were emerging adults. The inclusion of both adolescents and emerging adults renders the results difficult to generalize to specific developmental phases, and parental monitoring may serve different purposes and have differential impact on youth depending on the youth's developmental phase. The implications of parental monitoring behaviors for a 13-year-old adolescent would be quite different than the implications of these behaviors for a 20-year-old emerging adult. Future research using larger samples are needed to tease out differences between adolescents and young adults as it relates to in-person and computer-mediated parental monitoring. To better understand how youth and parents are using technology as part of the parental monitoring process, future research needs to use larger sample sizes and be intentional in including youth of particular ages.

Parents and youth also self-selected to participate in this study. There could be something special or unique about the parents who chose to forward the information about the study to their youth. Perhaps these parents and youth report higher parent-child relationship quality and therefore the youth would be open to responding to their parents' invitation to participate. On the other hand, in some situations youth may have felt compelled to comply with parents' requests to participate in the study, and these relationships may actually be more controlling or less warm than relationships in the general population.

This study employed a cross-sectional study design to explore and describe computer-mediated parental monitoring behaviors and their associations with parental knowledge, substance initiation, and psychosocial adjustment. Therefore, it is difficult to determine the direction of effects, or whether bidirectional effects are occurring between parents and youth. Are parents directly parenting children or is parenting a reaction to what children are doing? Longitudinal study designs and advanced statistical methods need to be employed to tease out these possibilities.

The cross-sectional nature of these data makes it difficult to examine these processes using a developmental lens. Examination of youth and parent use of technology for parental monitoring using longitudinal research designs would allow researchers to compare the frequency and implications of these behaviors at different time points across the life span and examine possible mediators of this technology use, such as comfort with technology (Doty, Dworkin, & Connell, 2012), and frequency of using technology in

general. Our understanding of the associations between in-person and computer-mediated parental monitoring, parent-child relationship quality, and adolescent psychosocial adjustment would undoubtedly be enriched by longitudinal studies that attempt to establish causal relationships and temporal ordering. Researchers could answer questions about which comes first, youth risk behaviors, or parental monitoring?

The findings from the current study lay the foundation for future research in parents' and youths' use of technology for sharing information. How youth manage their information is a complex process (Daddis & Randolph, 2010; Finkenauer, Engels, & Meeus, 2002), and this aspect of parental monitoring and youth disclosure was not examined in the current study. There are many factors that were not included in the current study that would affect these things, such as how youth manage private information and keeping secrets from parents. Future research could examine how youth use technology to manage information and keep particular types of information private, or how technology may facilitate youth's sharing of private information with parents. Research has also shown that how parents react to youth disclosure of information is related to whether youth will disclose information in the future (Kerr & Stattin, 2003; Tilton-Weaver et al., 2010). Examining parents' emotional reactions to youths' disclosure of information via technology, and also youths' emotional reaction to parents' solicitation of information via technology would provide additional information about this complex process.

Parents and youth were recruited to participate in this study using online recruitment methods, and therefore the sample includes youth and parents who are already actively online and likely comfortable using technology. The majority of the parent participants found the survey through MTurk. While these online methods resulted in a sample of matched parent-youth dyads, the parents who were recruited via MTurk were guaranteed a small sum of money as compensation. Although compensation was small, there may be issues related to parents' motivation, privacy while completing the online survey, and parents' attention span and effort while completing the survey.

Research has found that MTurk workers' motivation to complete surveys differs from motivation found in other recruitment methods. Traditionally, survey-takers, like those who complete a survey through a list serv or Facebook advertisement, may be motivated to participate based on their personal interest (such as parents of children with certain disabilities or through obligation, such as college students taking an undergraduate psychology course). Some research shows that money is the most important motivation for MTurk workers who complete surveys (Horton, Rand, & Zeckhauser, 2011), as workers are virtually guaranteed compensation for completion of a survey. Because there is the potential for less personal investment in the research, one could argue that MTurk workers pay less attention to their work. However, the majority of parents in this sample answered all three attention checks correctly, suggesting that attention to survey items may not be an issue in the current study. Compared to other studies that used online recruitment methods such as list servs and Twitter, this study did

recruit a more ethnically diverse sample of youth and parents. This reflects other research that has found samples recruited using MTurk to be more diverse than samples recruited using other online methods, such as social media (e.g., Casler, Bickel, & Hackett, 2013).

Conclusions

The findings from this study provide evidence that the majority of youth and parents are using technology for the specific purposes of asking for and sharing information about children's whereabouts, associations, and activities. Additionally, there was great variability in the frequency with which youth and parents reported doing these behaviors, warranting examination of what accounts for these differences and what these differences mean for youth functioning and development. Both in-person child disclosure and in-person parental solicitation accounted for a significant amount of variance in parental knowledge, with differing patterns by youth and parent report, demonstrating complex relationships between these behaviors and perceptions of parental knowledge. Lastly, parental control emerged as a potential parenting strategy that could be effective for preventing cigarette initiation, but perhaps not alcohol or marijuana initiation. Future research with larger samples of youth and parents is needed to further examine these relationships.

Study 2

Study 2 expands upon Study 1 by using a larger sample of parents of adolescents who completed the online survey. Study 2 takes a person-centered approach to studying parental monitoring behaviors and parental knowledge by identifying specific patterns of in-person and computer-mediated child disclosure and parental solicitation as reported by parents of adolescents. Several studies (Kerr & Stattin, 2000; Stattin & Kerr, 2000) on parental knowledge attempt to parse out effects of one specific parental monitoring behavior on adolescent outcomes. However, previous research clearly demonstrates that parental monitoring behaviors do not occur in isolation; parents and youth are likely engaging in multiple parental monitoring strategies simultaneously (Lippold, Greenberg, Graham, & Feinberg, 2013).

Therefore, Study 2 extends prior research on parental monitoring by exploring how parental knowledge, adolescent substance initiation, and adolescent psychosocial adjustment are related to combinations of in-person and computer-mediated parental monitoring behaviors. By clearly distinguishing between in-person parental monitoring and computer-mediated parental monitoring, this study aimed to identify the specific patterns of these behaviors that may be protective against adolescents' risky behaviors and promote adolescents' positive psychosocial adjustment. Additionally, Study 2 focuses on parents of adolescents allowing for more precision about particular processes during this specific developmental phase.

Based on previous research on parental monitoring and the predictors of parental knowledge (primarily child disclosure; Stattin & Kerr, 2000), it is likely that parental knowledge differs significantly by patterns of in-person and computer-mediated parental monitoring behaviors. Previous research has demonstrated that child disclosure is strongly related to parental knowledge. Due to adolescents' ability to disclose information both in-person and through computer-mediated means, it could be that adolescents who disclose information via communication technology more frequently have parents who know more about their day-to-day lives than adolescents who do not. Technology allows individuals to stay connected while physically separated, so parents can potentially have more influence on teens' behaviors throughout the day, rather than simply just before school and after school. The increase in parental knowledge could then lead to decreased adolescent drug and alcohol use and conduct problems, as demonstrated by previous research findings (DiClemente et al., 2001; Waizenhofer et al., 2004).

This exploratory study makes several key contributions to the field regarding our understanding of parental monitoring. Specifically, it provides information about the relationship between computer-mediated parental monitoring and adolescent outcomes, bringing the field of parental monitoring into today's digitized world. The descriptive information provided by this research also lays the foundation for future research to further examine how technology can possibly be used as a tool to help parents effectively monitor their children.

Research Questions

Research Question 1a: How frequently do parents report computer-mediated parental monitoring?

Research Question 1b: Does frequency of computer-mediated parental monitoring differ significantly from frequency of in-person parental monitoring?

Research Question 1c: Are there significant differences in in-person and computer-mediated parental monitoring by parents' demographic characteristics?

Research Question 2: What are the most common and distinct patterns or clusters of in-person and computer-mediated parental monitoring?

Research Question 3: How are the identified clusters associated with parent-child trust/warmth, parental control, parental knowledge and adolescent psychosocial adjustment?

Research Question 4: Do parental trust/warmth and parental control moderate the relationship between cluster membership and parental knowledge and adolescent psychosocial adjustment?

Methodology

The research questions for Study 2 were answered using the same data collection methods employed in Study 1, but with a different subsample.

Participants

The sample for Study 2 includes parents who completed the online survey advertised on Facebook and MTurk. To be included in Study 2, parents must have answered about a child between the ages of 12 and 18 and reported living in the United

States. Parents who correctly answered at least one of the three attention checks correctly were included in the final sample for Study 2.

Over half of the participants were mothers (64.7%) and the majority of participants were White or Caucasian (76.1%). Approximately half of the sample reported about a male child (50.9%). Almost one-quarter of the sample earned less than $30,000 a year (21.8%). See Table 10 for more demographic information about the sample for Study 2.

Measures

Study 2 used the same parent-report measures as Study 1 (see Appendix II). Measures included parents' report of demographic information, frequency of in-person and computer-mediated child disclosure and parental solicitation, levels of parental trust/warmth, parental control, parental knowledge, child's substance initiation, and child's psychosocial adjustment (internalizing, externalizing, and prosocial behaviors).

Data Analysis Plan

Research Questions 1a-c. To answer research question 1a, how frequently do parents report computer-mediated parental monitoring, frequencies and descriptive analyses were computed (see Table 10). To answer research question 1b, does frequency of computer-mediated parental monitoring significantly differ from frequency of in-person parental monitoring, paired samples *t*-tests were computed. To answer research question 1c, are there significant differences in in-person and computer-mediated parental monitoring by demographic characteristics, *t*-tests and ANOVAs were computed. The

magnitude of the differences, or the effect size, will be reported using Cohen's *d* (Cohen, 1988).

Research Question 2. To answer the second research question, what are the most common and distinct patterns or clusters of in-person and computer-mediated parental monitoring, cluster analyses were computed. Cluster analysis is a type of data reduction, decreasing the information from the sample to information about specific, smaller subgroups. Cluster analysis classifies objects, in this case parents' reports of in-person and computer-mediated child disclosure and in-person and computer-mediated parental solicitation, into groups where objects in the same group are similar to others in the same group and objects in different groups are different from objects in other groups (Hair & Black, 2000). The clusters identified from the analysis should ideally have high internal homogeneity and high external heterogeneity. For example, parents who report low levels of in-person and computer-mediated parental monitoring should be grouped together in the same cluster, and parents who report more frequent in-person and computer-mediated parental monitoring should be grouped together in a different cluster.

Clusters were created using a multi-step process to find the optimal cluster solution both statistically and conceptually (Hair & Black, 2000). First, the variables included in the cluster analysis (in-person child disclosure and parental solicitation, and computer-mediated child disclosure and parental solicitation) were standardized to normalize variances across measures. Second, a hierarchical cluster analysis using the single linkage method of clustering and Euclidian distances was computed (Henry, Tolan,

& Gorman-Smith, 2005). After examining the agglomeration coefficients and dendrogram, this linkage and distance method recommended creating one cluster of 288 parents and a second cluster of one parent. It is recommended that if the single linkage method does not return identifiable clusters, Ward's method should be used; Ward's method assumes multivariate normal shapes in the data (Ward, 1963).

Third, a hierarchical cluster analysis was computed using Ward's method and squared Euclidian distance for a range of two to five clusters; SPSS saved each cluster solution. The agglomeration coefficients and the dendrogram were examined to help determine the optimal cluster solution. The agglomeration coefficients represent the distance between cluster centroids and a significant decrease in the coefficients occurs as similar clusters are merged. Scholars have recommended that the optimal and most distinct cluster solution is a solution before the significant decrease in agglomeration coefficients that is followed by very little change in the subsequent coefficients (Rowley, 2000). The agglomeration coefficients and dendrograms were examined to determine the optimal cluster solution.

The fourth step was to validate the number of clusters identified in the hierarchical cluster analysis by computing a *k*-means cluster analysis (Hair & Black, 2000). In this analysis, the software is told a priori the number of clusters to identify as well as the value of the cluster centers (means) for each cluster from the hierarchical cluster analysis. Then, the results of the previous hierarchical cluster analysis and the *k*-means cluster analysis are compared to determine the percentage of cases placed into the

same cluster using both methods. The results of the *k*-means cluster analysis placed 83.4% of the cases in the same cluster they were in for the hierarchical cluster analysis, a high degree of congruent classification, validating the results of the hierarchical cluster analysis (Hair & Black, 2000). This combination of methods capitalizes on the strengths of both methods and compensates for their weaknesses.

Research Question 3. To answer the third research question, how are the identified clusters associated with parental trust/warmth, parental control, parental knowledge, and adolescent's psychosocial adjustment, ANOVAs were computed. A separate ANOVA analysis was computed for each dependent variable with cluster membership as the independent variable. Chi-square analyses were computed to examine differences in substance initiation between the three clusters.

Research Question 4. A series of hierarchical regressions were computed to examine the potential moderating effects of parental trust/warmth and parental control on associations between cluster membership and parental knowledge and adolescent psychosocial adjustment. Dummy coding was used to create meaningful predictors identifying differences between clusters on the associations between trust/warmth and outcome variables and associations between parental control and outcome variables. Dummy coding allowed for the examination of differences in parental knowledge and psychosocial adjustment by cluster membership. One variable for membership in the moderate-moderate cluster (0= No, 1 = Yes) was created, and one variable for

membership in the high-high cluster (0 = No, 1 = Yes) was created. Therefore, the high-low cluster was the comparison cluster.

Hierarchical regressions included three steps: the first step entered the dummy-coded variables for cluster membership, the second step included the moderator (parental trust/warmth or parental control), and the third step included the interaction term between cluster membership and the moderator. To account for colinearity of predictor terms, the interaction terms were created by centering each independent variable around its mean (Jaccard, Wan, & Turrisi, 1990; Lance, 1988). The high-low cluster was used as the comparison group for all analyses.

Results

Preliminary Analyses

Prior to conducting the primary analyses, descriptive information was computed to examine the minimum, maximum, range, mean, standard deviation, skewness, and number of cases missing data for each key study variable (see Table 12). Box plots and histograms were also created and examined for each key variable to visually assess the distribution and identify outliers that would skew study results.

Missing data. There was very little missing data on key study variables, ranging from zero cases missing data to 14 (4.7% of the sample) cases missing data. There were no significant patterns of missing data revealed in the missing value analysis computed in SPSS, and no differences in demographic characteristics of parents missing data for at least one variable and parents missing no data for any study variables. Therefore,

expectation maximization imputation was used to impute missing data for key study variables.

Outliers. After conducting expectation maximization imputation, box plots and histograms were examined again to determine the presence of outliers that would affect study results, particularly since cluster analysis is sensitive to outliers. The box plots and histograms showed a few possible outliers, particularly some parents who reported very infrequent (almost never) in-person child disclosure or in-person parental solicitation. If a parent reported in-person child disclosure or in-person parental solicitation less frequently than 1.5 times the interquartile range (IQR) for each variable (less than 1.37 for in-person child disclosure and less than 0.99 for in-person parental solicitation), this parent was identified as an outlier and removed from the dataset. This procedure resulted in deleting eight parents (2.7% of the original sample of 297 parents), for a final analytical sample of $N = 289$ for the study's primary analyses.

Skewness. Preliminary analyses showed that parental trust/warmth (skewness statistic = -1.29) and parental control (skewness statistic = -1.24) were negatively skewed. Therefore, inverse log transformations were computed, which resulted in more normally distributed scales for both of these measures (skewness statistics were -0.24 and -0.06 after transformations, respectively). All analyses used the transformed variables for parental trust/warmth and parental control. Any analyses that used these variables were examined prior to transformation and after the inverse log transformation to ascertain any possible differences in results; no differences were found.

Research Question 1a: Frequency of Computer-mediated Parental Monitoring

On average, parents reported that their child discloses information using technology "sometimes" ($M = 2.35$; see Table 11). Less than one-fifth of the sample (13.50%) reported that their child "almost always" discloses information using technology; 23.2% of the sample reported that their child "often" discloses information using technology; 24.2% of the sample reported that their child "sometimes" discloses information using technology; 20.4% reported that their child "rarely" discloses information using technology; and 18.7% of the sample reported that their child "almost never" discloses information using technology.

On average, parents reported soliciting information from their child using technology "rarely" ($M = 1.76$; see Table 11). Less than five percent of the sample (4.15%) reported they "almost always" solicited information from their child using technology; 13.50% of the sample reported they "often" solicited information from their child using technology; 24.2% of the sample reported they "sometimes" solicited information from their child using technology; 27.0% reported they "rarely" solicited information from their child using technology; and 31.10% of the sample reported they "almost never" solicited information from their child using technology.

Research Question 1b: Comparison of In-person and Computer-mediated Parental Monitoring

Parents reported more frequent in-person child disclosure ($M = 3.80$) than computer-mediated child disclosure ($M = 2.38$), $t(288) = 14.76$, $p < .001$; the effect size

for this difference was large (Cohen's $d > 1.00$). Parents also reported more frequent in-person parental solicitation ($M = 3.34$) than computer-mediated parental solicitation ($M = 1.77$), $t(288) = 20.34$, $p < .001$; the effect size for this difference was also large (Cohen's $d > 1.00$).

Parents reported more frequent in-person child disclosure ($M = 3.80$) than in-person parental solicitation ($M = 3.34$), $t(288) = 9.38$, $p < .001$; the effect size for this difference was moderate (Cohen's $d = 0.54$). Parents also reported more frequent computer-mediated child disclosure ($M = 2.38$) than computer-mediated parental solicitation ($M = 1.77$), $t(288) = 9.56$, $p < .001$; the effect size for this difference was moderate (Cohen's $d = 0.47$).

Research Question 1c: Demographic Differences in In-person and Computer-mediated Parental Monitoring

Gender. Independent-samples *t*-tests revealed that mothers ($M = 3.90$) reported more frequent child disclosure in person than fathers ($M = 3.60$), $t(287) = -2.84$, $p = .005$; the effect size for this difference was small to moderate (Cohen's $d = 0.35$). Mothers ($M = 3.43$) also reported more frequent parental solicitation in person than fathers ($M = 3.17$), $t(287) = -2.56$, $p = .011$; the effect size for this difference was small to moderate (Cohen's $d = 0.31$). Mothers ($M = 2.50$) reported more frequent computer-mediated child disclosure than fathers ($M = 2.16$), $t(287) = -2.06$, $p = .04$; the effect size for this difference was small (Cohen's $d = 0.25$).

Education. There were no significant differences in frequency of in-person and computer-mediated parental monitoring by education.

Income. There were no significant differences in frequency of in-person or computer-mediated parental monitoring by income.

Race. Analyses revealed no significant differences in frequency of in-person or computer-mediated parental monitoring by race.

Marital Status. Independent-samples *t*-tests revealed that parents who were not married ($M = 2.58$) reported more frequent computer-mediated child disclosure than parents who were married ($M = 2.27$), $t(287) = -1.98$, $p = .049$; the effect size for this difference was small (Cohen's $d = 0.24$). Parents who were not married ($M = 2.01$) also reported more frequent computer-mediated parental solicitation than parents who were married ($M = 1.64$), $t(287) = -2.50$, $p = .013$; the effect size for this difference was small (Cohen's $d = 0.31$). There were no significant differences for in-person child disclosure or in-person parental solicitation by marital status.

Geographic area. Analyses revealed no significant differences in frequency of in-person or computer-mediated parental monitoring by geographic area.

Research Question 2: Clusters of In-Person and Computer-Mediated Parental Monitoring

Upon examination of the agglomeration coefficients, a distinct decrease in coefficients occurred after the three cluster solution (see Table 12). After examining the

agglomeration coefficients and dendrogram, it was determined that the three-cluster solution was optimal.

Description of final three-cluster solution. Cluster 1 had 65 parents (22.5% of sample), Cluster 2 had 120 parents (41.5% of sample), and Cluster 3 had 104 parents (36.0% of sample). ANOVA analyses confirmed that the three clusters differed significantly among the four variables used to create the clusters, validating that the clusters are indeed distinct from each other (see Table 13 and Figure 1).

Cluster 1 is characterized by moderately frequent in-person child disclosure and parental solicitation, and moderately frequent computer-mediated child disclosure and parental solicitation (the moderate-moderate cluster). Cluster 2 is characterized by high frequency of in-person parental monitoring and high frequency of computer-mediated parental monitoring (the high-high cluster). Cluster 3 is characterized by high frequency of in-person child disclosure and in-person parental solicitation and low frequency of computer-mediated child disclosure and computer-mediated parental solicitation (the high-low cluster; see Figure 1).

Compared to parents in the high-high cluster and parents in the high-low cluster, parents in the moderate-moderate cluster reported the lowest level of parent-child trust/warmth and parental control, as well as the lowest level of parental knowledge (see Table 13). There were no significant differences in parental knowledge, parent-child trust/warmth, or parental control between parents in the high-high cluster and parents in the high-low cluster.

Chi-square analyses revealed that the proportion of parents who were married was unequally distributed among the three clusters (χ^2 [2, N = 289] = 6.24, p = .04). The high-low cluster had the highest proportion of parents who were married (74.0%), followed by the high-high cluster (60.0%) and the moderate-moderate cluster (58.5%). No other significant differences by demographic characteristics were found (see Table 13).

Research Question 3: Differences in Parental Knowledge, Substance Initiation, and Psychosocial Adjustment between Clusters

Analyses revealed that parents in the moderate-moderate cluster reported significantly lower levels of parental knowledge than parents in the high-high cluster and parents in the high-low cluster (see Table 13). No significant differences in parental knowledge we found between the high-high cluster and the high-low cluster.

Regarding differences in substance initiation, results revealed that the proportion of parents who reported that their child had initiated cigarette, marijuana, and other illegal drug use was unequally distributed among the three clusters. The moderate-moderate cluster had the highest proportion of parents who reported that their child had initiated cigarette use (21.54%), followed by the high-high cluster (17.50%), and the high-low cluster had the smallest proportion (8.65%; χ^2 [2, N = 289] = 5.97, p = .051; see Table 13). The high-high cluster had the highest proportion of parents who reported that their child had initiated marijuana use (25.0%), followed by parents in the moderate-moderate cluster (20.00%), and the high-low cluster had the smallest proportion (11.54%; χ^2 [2, N = 289] = 6.60, p = .04). Though one cell had a count of less than 5, the chi-square

analysis for initiation of other illegal drug use was significant; the moderate-moderate cluster had the highest proportion of parents who reported that their child had ever used illegal drugs (9.23%), followed by the high-high cluster (8.33%), and the high-low cluster had the smallest proportion (0.01%; χ^2 [2, N = 289] = 7.17, p = .03).

ANOVA analyses indicated that parents in the moderate-moderate cluster reported significantly higher levels of child internalizing and externalizing behaviors and lower levels of prosocial behaviors by their teen than did parents in the high-high cluster and parents in the high-low cluster (see Table 13). There were no significant differences in parental knowledge or child's psychosocial adjustment between parents in the high-high cluster and parents in the high-low cluster.

Research Question 4

Separate regressions were computed to examine the potential moderating effects of parental trust/warmth and parental control (see Tables 14-17).

Parental knowledge. Results showed that neither parental trust/warmth nor parental control moderated the associations between cluster membership and parental knowledge (see Table 14 and Table 16). However, controlling for the effects of cluster membership, parental trust/warmth and parental control accounted for a significant amount of variance in parental knowledge, but the interaction terms were not significant.

Internalizing. Results showed that parental trust/warmth did not moderate the association between cluster membership and internalizing (see Table 14). However, there was a significant interaction between cluster membership and parental control,

specifically between control and the moderate-moderate cluster and the high-low cluster (see Table 16). Plotting the interaction effect showed that parental control was a significant predictor of internalizing, such that parents in the moderate-moderate cluster who reported low levels of parental control also reported that their adolescent had more internalizing symptoms, on average (see Figure 2). Conversely, parents in the moderate-moderate cluster who reported high levels of parental control reported that their adolescent had fewer internalizing symptoms, on average. Levels of parental control did not influence levels of internalizing for parents in the high-low cluster.

Externalizing. Results showed that parental trust/warmth did moderate the association between cluster membership and externalizing (see Table 15), specifically between the moderate-moderate cluster and the high-low cluster, and the high-high cluster and the high-low cluster. Plotting the interaction effects showed that parental trust/warmth was a significant predictor of externalizing, such that parents in the moderate-moderate cluster who reported lower levels of trust/warmth reported higher levels of externalizing than parents in the high-low cluster (see Figure 3). Parents in the high-high cluster who reported lower levels of trust/warmth also reported higher levels of externalizing than parents in the high-low cluster.

Results also showed that parental control moderated the association between cluster membership and externalizing (see Table 17), specifically between the high-high cluster and the high-low cluster. Plotting the interaction effect showed that parental control was a significant predictor of externalizing, such that parents in the high-high

cluster who reported high levels of control reported significantly lower levels of externalizing than parents in the high-low cluster (see Figure 4).

Prosocial behaviors. Results showed that neither parental trust/warmth nor parental control moderated the association between cluster membership and prosocial behaviors (see Tables 15 and 17).

Discussion and Implications

The goal of Study 2 was to extend the findings of Study 1 by further describing computer-mediated child disclosure and computer-mediated parental solicitation as reported by a larger sample of parents of adolescents. The vast majority of previous research on parental monitoring has examined individual parental monitoring behaviors in isolation and compared them to each other. Study 2 used a person-centered approach to integrate parents' reports of multiple parental monitoring behaviors that are likely simultaneously occurring. Little is known about how these behaviors occur together to create unique patterns of these behaviors, or subgroups of parents based on a combination of their monitoring behaviors. This study sheds light on how parents monitor their children in today's digital age.

The frequency of in-person and computer-mediated child disclosure and parental solicitation differed significantly across the three identified clusters, providing evidence that the multi-step cluster analysis was successful in creating distinct clusters of parents. While descriptive analyses showed that on average, parents reported infrequent computer-mediated child disclosure and computer-mediated parental solicitation, there

were important individual differences in the combinations of these behaviors. This demonstrates the importance of taking a person-centered approach to examining parental monitoring behaviors.

The high-high cluster was the largest of the clusters, indicating that the largest proportion of parents in this sample (41.52%) reported high levels of in-person parental monitoring and high levels of computer-mediated parental monitoring. The moderate-moderate cluster was the smallest cluster, indicating that the smallest proportion of parents in this sample (22.49%) reported relatively low levels of in-person parental monitoring and moderate levels of computer-mediated parental monitoring compared to the other clusters. Approximately one-third of the sample was in the high-low cluster (35.99%), characterized by high frequency of in-person parental monitoring and very low frequency of computer-mediated parenting monitoring. These results suggest that even within a sample of parents who are online, technology is not necessarily the predominant method of communication between parents and adolescents; parents who reported high frequency of computer-mediated child disclosure and computer-mediated parental monitoring also reported high frequency of in-person child disclosure and in-person parental solicitation. This finding supports previous research that communication via technology complements or supplements communication that occurs in person, and is not replacing in-person interactions between parents and children (Connell & Dworkin, 2012; Hampton & Wellman, 2003; Hertlein & Blumer, 2012).

Parents in the high-low group reported the lowest proportion of youth having initiated any substance, while parents in the moderate-moderate and high-high groups reported the highest, and similar, levels of substance initiation; approximately one-fifth of parents in these two clusters reported their adolescent had initiated cigarette use, 40% reported their adolescent had initiated alcohol use, and about one-quarter reported that their adolescent had initiated marijuana use. Though hypothesized to be a protective factor for youth, it is curious that parents who reported frequent computer-mediated parental monitoring also had the highest proportion of substance initiation by their adolescents. Given the wealth of research findings demonstrating parent-to-child protective effects of parental monitoring on adolescent substance use and delinquency (DiClemente et al., 2001; Steinberg, 2001), why would these parents, who monitor their child in-person and via technology frequently, also report high levels of substance initiation?

One explanation for the higher proportion of youth initiating substances despite high levels of computer-mediated parental monitoring, particularly for the high-high cluster, is that these youth have initiated substance use despite their parents' active monitoring efforts and overall warm, trusting relationships. This finding suggests that other factors outside the parent-child relationship and communication play a significant role in contributing to whether adolescents initiate substances or not. A second possible explanation for this finding is that these parents are truly aware of their adolescent's substance use as a result of their high frequency of communication with their adolescent

in person and via technology. These parents reported high levels of knowledge about their child's whereabouts, associations, and activities, and perhaps given this knowledge, they are accurate reporters of their child's substance use. It is important to remember that the parental solicitation measure included an item about using technology to talk with parents of their child's friends. It could be that technology is one way parents can connect with other adults who know and spend time with their child, and parents discuss their children's possible substance use over the phone or via online social media. A third explanation could be that parents who use technology know more about their child's whereabouts, associations, and activities, and therefore perceive that they also know more their child's substance use, or even overestimate their child's substance initiation.

Parents' Behaviors as Reactions to Children's Behaviors

A fourth, alternative explanation for this finding is that these parents' high frequency of parental monitoring in person and via technology is a *reaction* to their adolescent's substance initiation. These parents could be responding to their child's initiation of substances, which they view as a problem, and are subsequently implementing additional monitoring behaviors in multiple realms, both face-to-face and via technology, in efforts to stop the risk taking behaviors that are already occurring. Parents may be monitoring more as a response to their child beginning to participate in risk behaviors or associate with a peer group that engages in risk behaviors, as the scale for computer-mediated parental solicitation included frequency of using technology to communicate with their child's friends. These parents may have at one time been

classified in the high-low cluster, but since learning or suspecting their child's substance use, changed their behaviors in reaction to their adolescent's behaviors and moved to the high-high cluster.

This possible alternative explanation has been empirically supported in the field of parent-adolescent communication about sexual behavior; research has shown that mothers who believe their child or their child's friends are sexually active have more frequent discussions with their adolescent about safe sex (Fox & Inazu, 1980; Raffaelli, Bogenschneider, & Flood, 1998). Once parents know or suspect that their child, particularly their daughter, may be engaging in sexual activity, they may attempt to protect their child by providing practical information and talking more about this sensitive topic (Raffaelli et al., 1998). It may be that parents who are more concerned about sexuality communicate more clearly or directly and their youth report more frequent conversation, whereas those who are less concerned are more vague or indirect. Computer-mediated communication, such as text messaging or email, may provide an additional way or tool for parents to communicate with their adolescent clearly and directly about substance use or ask them where they are going and with whom in an effort to prevent substance use.

The vast majority of research about parent-child relationships and interactions has assumed unilateral effects from parent to child, ignoring the child's impact on the family system and how parents parent (Kerr & Stattin, 2003). As such, the majority of views about parenting during adolescence have posited that adolescent delinquency is partially

a result of poor parenting or parents' lack of effective monitoring (Fletcher, Darling, & Steinberg, 1995; Snyder & Patterson, 1987; Weintraub & Gold, 1991). These studies support the idea that parents' active supervisory and regulatory effects work protectively by keeping youth away from deviant peer contexts and out of trouble (Kerr & Stattin, 2003). Very little research supports the possibility of the alternative explanation, that parents' behaviors are also reactions to adolescent behavior and adjustment (Kerr & Stattin, 2003). Most of the research suggesting unilateral effects from parent to child are correlational in design, and results from these studies do not allow researchers to determine direction of effects.

More recently, some theoretical and empirical discussions support the notion of bidirectional effects between parents and children and support the notion of children as active agents within the family system (e.g., Kerr & Stattin, 2003; Kuczynski, 2003). These models and recent research findings suggest that parents' parenting is, at least in part, a reaction to what children are doing. Sameroff (1975) posed the transactional model of parenting, suggesting that parents and children participate in iterative interactions where one member of the dyad is impacted by and impacts the other member of the dyad during interactions. Similarly, according to the social relations model (Kenny & La Voie, 1984), the parent-child relationship consists of a series of specific, unique adjustments in parent-child interactions. This model suggests that parents and children are adjusting to and reacting to each other's behaviors in specific, deliberate ways. Several researchers have demanded that the field attend to the bidirectional and

interactional nature of the parent-child relationship, rather than focusing on the global relationship qualities of parent-child dynamics (Collins & Kuczynski, 1997; Kerr & Stattin, 2003).

Research examining bidirectional effects has found adolescent delinquency to be linked to less parental control over time, less emotional support and encouragement from parents over time, and more bad reactions to youths' communication over time (Kerr & Stattin, 2003). Given these findings from their study, Kerr and Stattin (2003) posited that youth delinquency seemed to prompt parents to be less controlling and less supportive. The authors suggested that parents might be reacting to the knowledge of their child's delinquency, or they might not even know about the delinquency and instead be reacting to the youth's behavior at home that may accompany delinquency, such as secrecy and manipulation. The youth's behavior, however, was directly linked to monitoring efforts in that the more the youth was lying, manipulating, and shirking responsibility, the less parents were engaged in active monitoring attempts (Kerr & Stattin, 2003).

While Kerr and Stattin (2003) found that over time, parents lessened their control and decreased their monitoring efforts in response to their child's delinquency, the results of the current study suggest that a subgroup of parents may respond in a different way. Perhaps some parents actually *increase* their monitoring efforts in response to their child's substance initiation. Given that parents in the high-high cluster also reported high levels of parental trust/warmth and parental control, monitoring their child via technology may be their response to learning of their child's substance use.

The Emotional Context in which Monitoring Happens

Although on average, parents in the high-high cluster reported high levels of parental trust/warmth, results of the current study revealed different relationships between monitoring and adolescents' externalizing behaviors by levels of parental trust/warmth within this cluster (see Table 15 and Figure 3). Parents who monitored frequently in person and via technology and who also reported high levels of parental trust/warmth reported lower levels of adolescent externalizing. However, frequent monitoring in the context of low levels of parental trust/warmth was associated with higher levels of adolescent externalizing. Perhaps computer-mediated parental monitoring is an effective reaction to children's delinquent behavior only in the context of parents still trusting their adolescent and responding in warm, loving ways. Alternatively, perhaps parents who are communicating with their child frequently both in person and via technology and who report low levels of parental trust/warmth are viewed by their teen as being overbearing, and possibly hindering their child's independence. Some research supports this idea; how parents react to youths' disclosure affects youths' future decisions to provide their parents with information about their daily activities (Tilton-Weaver et al., 2010).

Parental control could also play an important role in the possible influence of computer-mediated parental monitoring on youth adjustment. Parents who reported higher frequency of computer-mediated parental monitoring and high levels of parental control reported lower levels of both internalizing and externalizing among their youth. It

could be that general rules about asking for permission prior to making plans with friends and requiring children to disclose what they have been up to coupled with computer-mediated parental monitoring is protective. Perhaps youth who are generally expected to disclose information to and request permission from their parents view parents' use of technology as being associated with those general rules, and not as an act of intrusion or violation of privacy.

Parents in the moderate-moderate cluster reported similar levels of substance initiation as parents in the high-high cluster; however, their pattern of monitoring behaviors was different than parents in the high-high cluster. These parents reported less frequent in-person and less frequent computer-mediated child disclosure and parental solicitation. One explanation for this difference in monitoring behaviors yet similar responses about adolescents' substance initiation could be that these parents believe either that adolescent risk-taking is normative, or that any effort on the part of the parent to intervene is futile (Kerr & Stattin, 2003). Perhaps these parents believe that parents are powerless to handle their adolescent's misbehavior. This might go hand-in-hand with a belief that some degree of delinquency is normal and that the youth will outgrow it in time. Hence, parents' loosening of control in response to delinquency might reflect their beliefs that they cannot and need not try to stop it. Youth may act defiantly toward parents at home and this might make parents hesitant to ask questions about what the youth is doing away from home or hesitant to enforce rules and restrictions that require the youth to give them information and get their permission before going out (Kerr &

Stattin, 2003). Parents might choose silence to keep the peace, rather than create a conflict by confronting their child. This could explain the moderate-moderate cluster.

In addition to a high proportion of parents reporting that their child had initiated substance use, parents in the moderate-moderate cluster also reported the highest levels of internalizing and externalizing, and the lowest level of prosocial behaviors for their adolescent child. These parents reported lower levels of parental trust/warmth, parental control, and parental knowledge. These youth may not be doing as well as a result of relatively poor parent-child relationship quality and monitoring compared to youth in the high-high and high-low clusters.

Differences in Monitoring Behaviors by Demographic Characteristics

Previous research has found differences in parents' technology by demographic characteristics, particularly by varying levels of income and education (Doty et al., 2012; Martin & Robinson, 2007), and these differences could also extend to how parents and adolescents use technology specifically for parental monitoring. In the current study, no differences were found in parents' reports of frequency of in-person and computer-mediated child disclosure or in-person and computer-mediated parental solicitation by income or education. However, there were significant differences by other demographic characteristics.

Mothers reported more frequent in-person and computer-mediated child disclosure, and more frequent in-person parental solicitation, than fathers. This mirrors what is known about differences in how mothers and fathers obtain information about

their children. Previous research about in-person parental monitoring has found that mothers tend to know more about their adolescent's life than fathers. It has been hypothesized that this is because mothers may be more likely than fathers to gain knowledge through active supervision of children and children's voluntary disclosure of information, as well as the tendency for mothers to spend more time doing caregiving and shared activities with children compared to fathers (Crouter & Head, 2002; Waizenhofer et al., 2004). It could be that the tendency for mothers to do more caregiving and communication with children in person extends to the digital realm of communication. Perhaps given the traditional role of mothers as primary caregiver for children, mothers also tend to communicate with their children more frequently using technology, and children are more likely to disclose information using technology with mothers. However, mothers and fathers reported using technology for solicitation of information from children with similar frequency. Perhaps technology gives both mothers and fathers equal opportunity to connect with their adolescent child on their own. Parents may be capitalizing on this opportunity to connect with their adolescent with equal frequency, but still adolescents are not disclosing equally. Technology may provide adolescents with some control over when, what, and how they disclose to parents, as compared to communicating about these topics in person. Technology may also provide adolescents some freedom in activities adolescents feel their parents should not have much control over, such as music preferences, searching for information about different topics, or playing games, all of which they can do on a mobile device. Though specific information

management processes were not examined in the current study, adolescents may try to assert their autonomy by controlling how they use technology in responding to their parents.

The current study found that unmarried parents reported more frequent computer-mediated child disclosure and more frequent computer-mediated parental solicitation than parents who were married. Parenting is a difficult, taxing responsibility that requires the ability to juggle multiple roles and tasks in various family domains. As such, research demonstrates the presence and involvement of multiple caregivers or adults acting as parents is protective for children and youth (Dornbusch et al., 1985; Marshall, Noonan, McCartney, Marx, & Keefe, 2001). Studies have found parents use technology as a tool for finding information about child development and parenting (Dworkin, Connell, & Doty, 2013; Valaitis & Sword, 2005; Walker & Rudi, 2014). In support of the idea that technology may be used as a tool for parents, perhaps technology is also a tool that parents can use to supplement parenting face-to-face when more monitoring efforts are needed, and provide an additional outlet for parents and children to maintain their connection while physically separated.

Limitations and Future Directions

While this study contributes important information about individual differences in frequency of in-person and computer-mediated parental monitoring and its associations with adolescent substance initiation and psychosocial adjustment, it is not without limitations. This study focused solely on parents' report of their child's substance

initiation, and not children's actual substance initiation. This is important to keep in mind while interpreting the results, as the adolescent children of the parents in this sample may have reported different levels of substance initiation and psychosocial adjustment.

Though a significant subgroup of parents in this study reported that their adolescent had used substances, few parents reported that their adolescent used substances regularly, preventing analyses delving into differences between normative, experimental and problematic substance use. Future research could examine associations between computer-mediated parental monitoring and substance use in higher risk samples. Although there were no significant differences between in-person and computer-mediated parental monitoring by education, race, and geographic area, future research is needed to examine these differences as other research shows differences in general technology use by these demographic characteristics.

The finding that parents in the high-high cluster reported high levels of substance initiation demonstrates the complexity of monitoring and adolescent outcomes, and the need to consider and examine alternative or divergent explanations. Which comes first, adolescents' risk behaviors or parents' monitoring behaviors? There is still much to learn about bidirectional influences between parents and their children. The field has only recently expanded methodologies and had access to advanced statistical models that allow researchers to fully examine bidirectional relationships.

Conclusions

The person-centered approach revealed ways in which the relation between in-person and computer-mediated parental monitoring can be associated with adolescent outcomes. Similar to Study 1, the findings from Study 2 suggest a subgroup of parents and adolescents disclose information and solicit information using technology with high frequency. Generally, the field has assumed high levels of parental monitoring to be effective and protective for youth; however, the findings of the current study suggest that this relationship is complex and that another possibility is likely. Some parents may increase their monitoring efforts and delve into the digital realm to monitor their child who has already begun using substances. Future research with larger samples using longitudinal designs and advanced statistical methodologies are needed to tease out the direction of effects.

Integrated Discussion and Conclusions

Together, these studies aimed to bring the field of parental monitoring into the 21st century by exploring and describing how youth and parents use technology specifically to disclose and solicit information. These studies overcome several limitations in the field of families and technology and expand the edge of knowledge in this area.

Issues with Sampling and Study Design

The majority of research in this field has been conducted using homogenous samples of youth or parents who are predominantly white, middle or upper class, and highly educated (Dworkin et al., 2013). Some research has also examined technology use among intentionally selected subgroups of parents based on particular demographic characteristics, including African American parents of adolescents living in a particular geographic area (e.g., Cohall, Cohall, Dye, Dini, & Vaughan, 2004), fathers (e.g. Erera & Baum, 2009), or parents with fewer resources or lower levels of education (e.g., Kind, Huang, Farr, & Pomerantz, 2005). In an attempt to recruit more diverse and representative samples of youth and parents, the current studies were intentional in their recruitment efforts by using Facebook and Amazon Mechanical Turk, platforms found to result in more diversity within samples (Casler et al., 2013). As a result, the samples used in the current studies were more diverse, rendering the results of this study generalizable to more youth and parents than previous studies. To continue to generate useful information about how technology can be used as a tool for parenting and to facilitate

positive parent-child relationships, researchers must be thoughtful and intentional about recruiting sizable and representative samples.

Single information designs. The current studies also sought to overcome the limitations of single informant designs by asking parents to recruit their child to also participate in the study. While the sample recruited for Study 1 was small, it was possible to examine differences in youths' and parents' report of technology behaviors and use a cross-informant design to examine associations between behaviors, relationship quality, and parental knowledge. Including information from two reporters about the same behaviors provides more accurate information about what youth and parents are doing. Future research must strive to implement multi-informant designs to provide accurate information from multiple perspectives within the same family.

Issues with Measurement

The field as a whole has struggled with measuring technology use given the newness of technology behaviors in the family context. Researchers have not known what is important to ask about when it comes to technology use in the family context and supporting parent-child relationships. As a first step, the majority of researchers have asked broadly about youths' or parents' technology use to provide baseline, descriptive information, rather than asking about technology use for specific purposes, such as disclosing or soliciting information. In an attempt to overcome these limitations, the current studies adapted widely used measures of parental monitoring behaviors to ask about frequency of doing these behaviors using technology. These measures were found

to have high reliabilities, providing evidence that these behaviors are being measured with consistency. It is important for researchers to be thoughtful and intentional about measuring technology use to strengthen study designs and the resulting information that can be applied in programs and resources for parents.

Why Study Technology Use?

Just because the majority of youth and parents report using technology does not justify research on technology use. Researchers must consider what it is about the technology use in the family context that warrants empirical investigation. Specifically, we must think about what kinds of information about technology use would be important for future research, practitioners, policy, and parents and families. In the case of the current studies, previous research has shown that in general, parental monitoring is associated with adolescent substance use and adjustment. Given that parents and youth can now use communication technology specifically for monitoring purposes, this research was justified in examining whether computer-mediated parental monitoring plays a similar role within parent-child relationships as in-person parental monitoring.

As it applies to warranting future research about computer-mediated parental monitoring, both studies provided evidence that there are subgroups of youth and parents who do computer-mediated parental monitoring behaviors very frequently, and subgroups of youth and parents who never do these activities. Both studies found great variability in the frequency with which youth and parents reported these monitoring behaviors,

warranting future research on why some families use technology in these ways, why others do not, and what this means for youth adjustment and development.

So, What Do We Tell Parents?

Despite the current studies being exploratory and descriptive in nature, there are some specific implications for parents and practitioners who work with parents and families.

Importance of the context in which technology is being used. Findings from these studies provide evidence that it is not just parents' and youths' behaviors that matter in terms of parental knowledge and youth adjustment, but the contexts in which these behaviors are occurring that are also important. Likely, it is the climate in which these behaviors are occurring is what really matters when it comes to the impact the behaviors have on youth. While parents may want to know what they can *do* to improve their relationship with their teen if things aren't going well, it is important to remind parents about the importance of trust and warmth within the relationship. We can share with parents that youth who perceive that their parents trust them are more likely disclose information (Kerr et al., 1999). Parents can work to find appropriate opportunities where their teen can make or influence decisions, such as letting the teen choose which hobby to pursue or having a say in family activities, where parents can demonstrate support and trust in their youth's decision making. These demonstrations of support and trust can help teens feel trusted, and therefore the teen may be more likely to disclose information about more serious topics in the future.

Research also shows that parents' emotional responses to disclosure is predictive of youths' future disclosure (Tilton-Weaver et al., 2010). Therefore, parents could focus on being present and listening to their child without quick or harsh negative judgment of what they are being told. Asking questions using a non-judgmental tone and having a conversation about youths' preferences and activities may create a more open line of communication where parents and youth can discuss more serious topics, such as substance use and sexuality. It is also important to remind parents that youth will likely challenge boundaries around topics that are important to their youth, but that may not be as important to their overall functioning and adjustment, such as choices regarding clothing, hairstyle, music preferences, etc. Youth who perceive their parents to be accepting of their personal choices may then be more likely to disclose information about more difficult topics, such as dating and romantic relationships and career exploration.

More is not necessarily better. It can be easy to assume that more communication with youth, or more technology use to monitor or connect with youth, would have positive implications while a lack of communication or technology use would have negative implications. When it comes to monitoring, the findings from the current studies suggest that more technology use is not necessarily better, and that low technology use is not necessarily worse. Alternatively, technology could be thought of as a tool for parents and youth to check in, and that this checking in keeps parents and youth on the same page about routines and rules and keeps lines of communication open. Using technology to communicate with children when the relationship is not going well is likely

not the best course of action, and may actually exacerbate conflict and negative feelings. However, checking in via technology when things are going well likely perpetuates positive connection between parents and youth.

Avenues Future Research

Together, these studies provide a descriptive foundation about computer-mediated parental monitoring upon which future research can build. Given the findings of Study 1 demonstrating differences in youths' and parents' report of parental knowledge, future research must continue to examine multiple reporters' perceptions of these behaviors, parent-child relationship quality, and parental knowledge. Given the findings of Study 2 around about bidirectional influences in parents' and children's behavior, there is a strong need for longitudinal research designs that examine monitoring behaviors before, during, and after adolescence. Although Study 2 found three distinct clusters of parents based on their in-person and computer-mediated monitoring behaviors, future studies could examine variations within these groups. Perhaps parents within these different clusters have varied motivations for using or for not using technology for parental monitoring, for example.

There is a notable lack of qualitative and mixed methods research designs in the field of families and technology. Qualitative data is needed to provide insights into youths' and parents' experiences of using technology for parental monitoring as well as the meaning youth and parents ascribe to technology use and its role in parent-child relationships. Future research could also explore and implement innovative data

collection strategies for qualitative, mixed method, and quantitative research designs.

Opportunities for innovative research design and data collection strategies. Mobile devices in particular provide myriad opportunities related to how, when, and what information to collect from study participants. Text messages and emails have been sent to study participants to remind them to complete time diary surveys online, as implemented by Small and colleagues (2013). Participants can also provide qualitative information that may help answer particular research questions, including the content of text messages between parents and adolescents, or content of posts on social media. Some devices also have the capability to record the amount of time users spend on various activities on the device, such as text messaging, using social media applications, and surfing the web. Given these new opportunities for data collection, it is important for researchers to be intentional about the types of information needed to answer our most pressing research questions related to supporting parents, youth, and families.

Table 1

Demographic Information about Study 1 Sample (N = 56 Dyads)

Demographic Characteristic	Youth		Parents	
	n	%	*n*	%
Gender				
Female	26	46.4	42	75.0
Male	30	53.3	14	25.0
Age				
13	1	1.8	--	--
14	8	14.3	--	--
15	10	17.9	--	--
16	7	12.6	--	--
17	8	14.3	--	--
18	4	7.1	--	--
19	7	12.6	--	--
20	3	5.4	--	--
21	1	1.8	--	--
22	0	0.0	--	--
23	1	1.8	--	--
24	2	3.6	--	--
25	2	3.6	--	--
25-29	0	0.0	1	1.8
30-34	0	0.0	5	8.9
35-39	0	0.0	8	14.3
40-44	0	0.0	20	35.7
45-49	0	0.0	15	26.8
50-55	0	0.0	6	10.7
Other	1	1.8	0	0.0
Race/Ethnicity				
American Indian or Alaska Native	1	1.8	1	1.8
Asian	5	8.9	3	5.4
Black	7	12.5	10	17.9
White	37	66.1	39	69.6
Hispanic	3	5.4	3	5.4
Mixed Race	2	3.6	0	0.0
Don't know or prefer not to answer	1	1.8	0	0.0
Education Level				
8th grade	3	5.2	--	--
9th grade	8	13.8	--	--
10th grade	11	19.0	--	--
11th grade	7	12.1	--	--
12th grade	10	17.2	--	--

Table 1 continued

Demographic Information about Study 1 Sample (N = 56 Dyads)

Demographic Characteristic	Youth		Parents	
	n	%	*n*	%
Education Level				
1st year college	7	12.1	--	--
2nd year college	5	8.6	--	--
3rd year college	3	5.2	--	--
4th year college	2	3.6	--	--
High School/GED	--	--	5	8.9
Technical/vocational school	--	--	5	8.9
Some college	--	--	19	33.9
College graduate	--	--	19	33.9
Post-graduate training	--	--	8	14.3
Income				
Less than $10,000	--	--	2	3.4
$10,000-under $50,000	--	--	30	51.7
$50,000-under $75,000	--	--	10	17.2
$75,000-under $100,000	--	--	9	15.5
$100,000 or more	--	--	3	5.2
Don't know or prefer not to answer	--	--	3	5.2
Parents' Marital Status				
Divorced or separated	8	14.3	6	10.7
Married	34	60.7	38	67.9
Living with partner	2	3.6	2	3.6
Never married	9	16.1	--	--
Single	--	--	8	14.3
Widowed	3	5.4	2	3.6
Employment				
Part-time	--	--	8	13.8
Full-time	--	--	40	67.2
Does not work outside home	--	--	4	6.9
Unemployed, looking for work	--	--	5	8.6
Geographic Area				
Rural	13	23.2	14	24.1
Suburban	29	51.8	33	55.2
Urban	14	25.0	11	19.0

Table 2

Descriptive Statistics for Study 1 Variables

Scale	Adolescents						Parents					
	Min	*Max*	*M*	*SD*	*Skewness*	*α*	*Min*	*Max*	*M*	*SD*	*Skewness*	*α*
Child disclosure: In-person[a]	1.67	5.00	3.73	0.91	-0.46	0.68	1.93	5.00	3.95	0.77	-0.66	0.67
Child disclosure: Using technology[a]	0.00	5.00	2.45	1.42	-0.12	0.86	0.00	5.00	2.39	1.35	-0.08	0.88
Parental solicitation: In-person[a]	0.72	5.00	3.29	1.07	-0.49	0.85	1.30	5.00	3.48	0.82	-0.18	0.77
Parental solicitation: Using technology[a]	0.00	5.00	1.98	1.20	0.59	0.87	0.00	5.00	1.87	1.34	0.51	0.89
Parental trust/warmth[b]	1.38	5.00	4.48	0.65	-2.42	0.95	2.88	5.00	4.58	0.43	-1.31	0.82
Parental control[a]	0.00	5.00	3.57	1.47	-1.32	0.96	0.00	5.00	3.86	1.36	-1.32	0.91
Parental knowledge[a]	0.00	5.00	3.47	1.24	-0.97	0.88	1.60	5.00	4.00	0.77	-1.28	0.87
Internalizing[c]	10.00	27.00	15.98	4.89	0.50	0.87	10.00	25.00	14.05	3.91	1.02	0.85
Externalizing[c]	10.00	24.00	15.66	4.04	0.32	0.81	10.00	25.00	13.66	3.45	1.36	0.80
Prosocial[c]	7.00	15.00	12.82	1.98	-0.76	0.77	7.00	15.00	12.75	2.22	-0.87	0.75

Note. [a]0-1 = Almost Never, 1-2 = Rarely, 2-3 = Sometimes, 3-4 = Often, 4-5 = Almost Always. [b]1 = Almost Never or Never True, 2 = Not Very Often True, 3 = Sometimes True, 4 = Often True, 5 = Almost Always or Always True. [c]1 = Not True, 2 = Somewhat True, 3 = Certainly True.

Table 3

Intercorrelations between Study Variables for Study 1

Variable	1	2	3	4	5	6	7	8	9	10
1. Youth report: Child disclosure: In-person	--									
2. Youth report: Child disclosure: Computer-mediated	0.10	--								
3. Youth report: Parental solicitation: In-person	0.61***	0.12	--							
4. Youth report: Parental solicitation: Computer-mediated	0.09	0.72***	0.27*	--						
5. Youth report: Parent-child trust/warmth	0.32*	0.27*	0.40**	0.23	--					
6. Youth report: Parental Control	0.40**	0.13	0.41**	0.23	0.18	--				
7. Youth report: Parental Knowledge	0.50***	0.25	0.44**	0.27*	0.48***	0.48***	--			
8. Youth report: Internalizing	-0.11	0.08	-0.17	0.06	-0.35*	0.03	-0.23	--		
9. Youth report: Externalizing	-0.28*	-0.17	-0.17	-0.03	-0.34*	-0.10	-0.33*	0.67***	--	
10. Youth report: Prosocial	0.15	0.15	-0.01	0.11	0.13	0.09	0.31*	-0.12	-0.14	--

*$p < .05$, **$p < .01$, ***$p < .001$.

Table 3 continued

Intercorrelations between Study Variables for Study 1

	1	2	3	4	5	6	7	8	9	10
11. Parent report: Child disclosure: In-person	0.39**	0.10	0.14	0.08	-0.10	0.06	0.31*	0.09	-0.14	0.28*
12. Parent report: Child disclosure: Computer-mediated	0.14	0.41**	-0.02	0.29*	0.23	0.04	0.30*	-0.06	-0.13	0.27*
13. Parent report: Parental solicitation: In-person	0.28*	0.32*	0.39**	0.37**	0.33*	0.33*	0.49***	-0.05	-0.15	0.35**
14. Parent report: Parental solicitation: Computer-mediated	0.06	0.31*	0.07	0.40**	0.17	0.15	0.15	-0.05	-0.10	0.16
15. Parent report: Parent-child trust/warmth	0.06	0.08	0.25	-0.13	0.26	0.02	0.33*	-0.16	-0.18	0.17
16. Parent report: Parental Control	0.29*	0.15	0.16	0.08	0.02	0.65***	0.31*	0.21	-0.03	0.19
17. Parent report: Parental Knowledge	0.44**	0.13	0.22	-0.05	0.90	0.27*	0.41**	0.03	-0.22	0.34*
18. Parent report: Internalizing	-0.02	-0.11	-0.18	-0.04	-0.19	-0.02	-0.12	0.68***	0.52***	0.03
19. Parent report: Externalizing	-0.07	-0.24	-0.19	-0.10	0.08	-0.09	-0.13	0.34*	0.45**	-0.03
20. Parent report: Prosocial	0.11	0.04	0.21	0.11	-0.08	0.06	0.29*	-0.06	-0.08	0.20

*$p < .05$, **$p < .01$, ***$p < .001$.

Table 3 continued

Intercorrelations between Study Variables for Study 1

	11	12	13	14	15	16	17	18	19	20
11. Parent report: Child disclosure: In-person	--									
12. Parent report: Child disclosure: Computer-mediated	0.14	--								
13. Parent report: Parental solicitation: In-person	0.23	0.46***	--							
14. Parent report: Parental solicitation: Computer-mediated	-0.02	0.61***	0.38**	--						
15. Parent report: Parent-child trust/warmth	0.27*	0.10	0.33*	-0.08	--					
16. Parent report: Parental Control	0.31*	0.07	0.38**	-0.05	0.15	--				
17. Parent report: Parental Knowledge	0.53***	0.21	0.54***	-0.01	0.38**	0.52***	--			
18. Parent report: Internalizing	-0.05	-0.04	-0.16	-0.04	-0.40**	0.09	-0.05	--		
19. Parent report: Externalizing	-0.22	-0.01	-0.25	0.04	-0.48***	-0.16	-0.24	0.67***	--	
20. Parent report: Prosocial	0.47***	0.06	0.32*	0.02	0.51***	0.08	0.35**	-0.30*	-0.40**	--

*$p < .05$, **$p < .01$, ***$p < .001$.

Table 4

Contrast of Youth and Parent Report of Study 1 Variables

	Youth		*Parents*		
	M	*SD*	*M*	*SD*	*t*
Child disclosure: In-person	3.73	0.91	3.95	0.77	-1.78
Child disclosure: Using technology	2.45	1.42	2.39	1.35	-0.32
Parental solicitation: In- person	3.29	1.07	3.48	0.82	-1.31
Parental solicitation: Using technology	1.98	1.20	1.87	1.34	0.58
Parental trust/warmth	4.48	0.65	4.58	0.43	-1.27
Parental control	3.57	1.47	3.86	1.36	-1.82
Parental knowledge	3.47	1.24	4.00	0.77	3.43**
Internalizing	15.98	4.88	14.05	3.91	3.96***
Externalizing	15.66	4.04	13.66	3.45	3.77***
Prosocial	12.82	1.98	12.75	2.22	0.20

*$p < .05$, **$p < .01$, *** $p < .001$.

Table 5

Hierarchical Multiple Regression Analyses Examining Variance in Youth Report of Parental Knowledge Accounted for by Parent Report of Independent Variables

	Youth report of parental knowledge				
	B	*SE B*	*β*	*t*	ΔR^2
Step 1					.34**
Gender composition of dyad	0.20	0.13	0.19	1.50	
Trust/warmth: parent report	0.35	0.36	0.12	0.97	
Parental control: parent report	0.07	0.12	0.07	0.56	
In-person child disclosure: parent report	0.18	0.21	0.11	0.87	
In-person parental solicitation: parent report	0.53	0.20	0.35	2.67*	
Step 2					.01
Computer-mediated child disclosure: parent report	0.13	0.14	0.14	0.90	
Computer-mediated parental solicitation: parent report	-0.06	0.15	-0.06	-0.38	
Total R^2					.35

*$p < .05$, **$p < .01$

Table 6

Hierarchical Multiple Regression Analyses Examining Variance in Parent Report of Parental Knowledge Accounted for by Youth Report of Independent Variables

	Parent report of parental knowledge				
	B	*SE B*	*B*	*t*	ΔR^2
Step 1					.25*
Gender composition of dyad	0.09	0.09	0.14	0.99	
Trust/warmth: youth report	-0.01	0.16	-0.01	-0.08	
Parental control: youth report	0.04	0.08	0.08	0.50	
In-person child disclosure: youth report	0.40	0.13	0.49	2.98**	
In-person parental solicitation: youth report	-0.09	0.12	-0.13	-0.80	
Step 2					.06
Computer-mediated child disclosure: child's report	0.18	0.10	0.33	1.80^{+}	
Computer-mediated parental solicitation: child's report	-0.21	0.12	-0.34	-1.81^{+}	
Total R^2					.31

$^{+}p < .10$, $*p < .05$, $**p < .01$

Table 7

Youth and Parent Report of Youth Substance Initiation

	Youth Report		*Parent Report*	
	Yes	*No*	*Yes*	*No*
	N (%)	*N (%)*	*N (%)*	*N (%)*
Cigarette initiation	19 (33.9)	37 (66.1)	8 (14.3)	48 (85.7)
E-cigarette initiation	10 (17.9)	46 (82.1)	10 (17.9)	46 (82.1)
Alcohol initiation	33 (58.9)	23 (41.1)	25 (44.6)	31 (55.4)
Marijuana initiation	19 (33.9)	37 (66.1)	14 (25.0)	42 (75.0)
Illegal drug initiation	6 (10.7)	50 (89.3)	3 (5.4)	55 (94.6)

Table 8

Differences in Key Study Variables by Youth Report of Cigarette and Alcohol Initiation

	Youth Initiated Cigarette Use					Youth Initiated Alcohol Use				
	Yes (n = 19)		No (n = 37)			Yes (n = 33)		No (n = 23)		
	M	*SD*	*M*	*SD*	*t*	*M*	*SD*	*M*	*SD*	*t*
	Youth Report									
Child disclosure: In-person	3.16	0.89	4.02	0.79	3.72***	3.47	1.07	4.04	0.70	2.17*
Child disclosure: Using technology	2.37	0.98	2.49	1.61	0.30	2.23	1.34	2.67	1.58	1.08
Parental solicitation: In- person	3.07	1.05	3.41	1.07	1.14	3.25	1.10	3.37	1.17	0.37
Parental solicitation: Using technology	1.88	1.12	2.03	1.26	0.46	1.92	1.20	2.07	1.32	0.42
Parental trust/warmth	4.36	0.57	4.54	0.69	0.92	4.34	0.54	4.62	0.77	1.55
Parental control	3.01	1.45	3.85	1.41	2.09*	3.30	1.57	3.86	1.48	1.31
Parental knowledge	2.73	1.41	3.85	0.95	3.54**	3.28	1.10	4.01	0.92	2.53*
Internalizing	16.37	4.74	15.78	5.00	-0.42	15.79	4.83	16.00	5.39	0.15
Externalizing	17.52	3.66	14.70	3.94	-2.60*	15.96	3.71	15.00	4.56	-0.83
Prosocial	12.58	2.12	12.84	2.29	0.41	12.82	2.29	12.87	2.03	0.08
	Parent Report									
Child disclosure: In-person	3.77	0.83	4.04	0.73	1.27	3.94	0.86	4.06	0.68	0.54
Child disclosure: Using technology	2.25	1.13	2.46	1.47	0.56	2.19	1.15	2.80	1.58	1.59
Parental solicitation: In- person	3.23	0.83	3.60	0.79	1.64	3.29	0.79	3.75	0.84	2.05*
Parental solicitation: Using technology	1.75	1.25	1.93	1.40	0.47	2.00	1.06	1.98	1.63	-0.07
Parental trust/warmth	4.61	0.36	4.57	0.47	-0.26	4.60	0.36	4.58	0.52	-0.15
Parental control	3.31	1.30	4.13	1.32	2.21*	3.52	1.64	4.24	0.98	1.94
Parental knowledge	3.64	0.93	4.19	0.62	2.63*	3.75	0.84	4.36	0.49	3.22**
Internalizing	14.32	3.70	13.92	4.06	-0.36	13.36	3.44	14.83	4.69	1.25
Externalizing	13.95	3.10	13.51	3.65	-0.44	13.21	2.75	14.30	4.28	1.10
Prosocial	12.58	2.12	12.84	2.29	0.41	12.82	2.29	12.87	2.03	0.39

*p<.05, **p < .01, ***p < .001.

Table 9

Differences in Key Study Variables by Youth Report of Marijuana Initiation

	Youth Initiated Marijuana Use				
	Yes (n = 19)		No (n = 37)		
	M	*SD*	*M*	*SD*	*t*
	Youth Report				
Child disclosure: In-person	3.21	0.91	3.99	0.81	3.27**
Child disclosure: Using technology	2.48	1.18	2.44	1.54	-0.11
Parental solicitation: In- person	3.11	0.93	3.38	1.13	0.90
Parental solicitation: Using technology	2.11	1.15	1.91	1.24	-0.59
Parental trust/warmth	4.43	0.46	4.51	0.73	0.38
Parental control	3.15	1.42	3.78	1.47	1.55
Parental knowledge	2.78	1.33	3.83	1.03	3.28**
Internalizing	15.95	4.74	16.00	5.01	0.04
Externalizing	16.37	3.89	15.29	4.12	-0.94
Prosocial	12.36	2.27	13.05	1.81	1.23
	Parent Report				
Child disclosure: In-person	3.82	0.71	4.02	0.80	0.91
Child disclosure: Using technology	2.17	1.04	2.50	1.49	0.98
Parental solicitation: In- person	3.34	0.68	3.55	0.88	0.90
Parental solicitation: Using technology	1.80	1.24	1.91	1.41	0.30
Parental trust/warmth	4.61	0.38	4.57	0.46	-0.26
Parental control	3.56	1.46	4.01	1.30	1.16
Parental knowledge	3.75	0.82	4.14	0.73	1.80
Internalizing	13.95	3.47	14.11	4.17	0.14
Externalizing	13.16	2.83	13.92	3.74	0.78
Prosocial	12.32	2.38	12.97	2.13	1.05

*p<.05, **p < .01, ***p < .001.

Table 10

Demographic Information about Sample for Study 2 (N = 289 Parents)

Demographic Characteristic	*n*	%
Gender		
Male	102	35.3%
Female	187	64.7%
Race/Ethnicity		
White or Caucasian	220	76.1%
Asian	10	3.5%
Hispanic or Latin American	12	4.2%
Black or African American	37	12.8%
Mixed Race	5	1.7%
American Indian or Alaska Native	2	0.7%
Native Hawaiian or Other Pacific Islander	3	1.0%
Income		
Less than $10,000	7	2.4%
$10,000 – under $20,000	23	8.0%
$20,000 – under $30,000	33	11.4%
$30,000 – under $40,000	45	15.6%
$40,000 – under $50,000	44	15.2%
$50,000 – $75,000	56	19.4%
$75,000 – under $100,000	50	17.3%
$100,000 or more	26	9.0%
Don't know or prefer not to answer	5	1.7%
Employment status		
Employed part-time	59	20.4%
Employed full-time	179	61.9%
Do not work outside the home	27	9.3%
Unemployed, looking for work	19	6.6%
Other	5	1.7%
Education		
High school/GED	34	11.8%
Business, technical, or vocational school	17	5.9%
Some college, no 4-year degree	87	30.1%
College graduate	106	36.7%
Post-graduate training	43	14.9%
Don't know or prefer not to answer	1	0.3%

Table 10 continued

Demographic Information about Sample for Study 2 (N = 289 Parents)

	n	%
Marital Status		
Married	187	64.7%
Living with partner	33	11.4%
Divorced or separated	41	14.2%
Single	22	7.6%
Widowed	6	2.1%
Geographic area		
Rural	69	23.9%
Suburban	155	53.6%
Urban	65	22.5%
Age of Target Child		
13	7	2.4%
14	39	13.5%
15	78	27.0%
16	72	24.9%
17	56	19.4%
18	37	12.8%
Gender of Target Child		
Male	147	50.9%
Female	142	49.1%
United States Region		
Northeast	41	14.2%
South	108	37.4%
Midwest	73	25.3%
West	65	22.5%
Alaska or Hawai'i	2	<1.0%

Table 11

Descriptive Information For and Intercorrelations among Variables for Study 2

Variables	1	2	3	4	5	6	7	8	9	10
1. Child disclosure: In-person	--									
2. Child disclosure: Computer-mediated	-.05	--								
3. Parental solicitation: In-person	.53***	.18**	--							
4. Parental solicitation: Computer-mediated	-.05	.65***	.23***	--						
5. Parent-child trust/warmth	.52***	.08	.46***	-.03	--					
6. Parental Control	.43***	-.10	.37***	-.16*	.33***	--				
7. Parental Knowledge	.60***	.05	.56***	.01	.58***	.58***	--			
8. Internalizing	-.28***	.05	-.25***	.06	-.48***	-.25***	-.29***	--		
9. Externalizing	-.39***	.07	-.26***	.13*	-.55***	-.24***	-.31***	.62***	--	
10. Prosocial	.48***	.07	.47***	.04	.59***	.25***	.46***	-.36***	-.50***	--
Minimum	1.37	0.00	0.92	0.00	0.27	0.17	0.90	10.00	10.00	5.00
Maximum	5.00	5.00	5.00	5.00	1.00	1.00	5.00	25.00	26.00	15.00
Mean	3.80	2.38	3.34	1.77	0.72	0.66	3.88	13.84	14.07	12.32
(SD)	0.87	1.35	0.84	1.22	0.23	0.28	0.83	3.57	3.73	2.28
Skewness	-0.56	-0.17	-0.09	0.38	-0.24	-0.06	-0.82	1.00	1.07	-0.74
α	.76	.87	.76	.86	.92	.88	.89	.80	.83	.78

Table 12

Agglomeration Schedule for Hierarchical Cluster Analysis using Ward's Method and Squared Euclidian Distance

Number of clusters	Agglomeration coefficient for previous cluster solution	Agglomeration coefficient for this cluster solution	Change in agglomeration coefficient
2	1152.00	839.377	312.623
3	839.377	605.710	233.667
4	605.710	539.776	65.934
5	539.776	483.757	56.019

Table 13

Descriptive Information about Final Three-cluster Solution

					ANOVA statistics	
	Full sample	Moderate-moderate Cluster (n = 65)	High-high Cluster (n = 120)	High-low Cluster (n = 104)	F	p
	M (SD)	M (SD)	M (SD)	M (SD)		
Monitoring variables used to create clusters						
In-person Child Disclosure	3.80 (0.87)	2.81_{ab} (0.72)	3.95_{ac} (0.70)	4.24_{bc} (0.61)	95.57	<.001
Computer-mediated Child Disclosure	2.38 (1.35)	2.45_{ab} (0.92)	3.48_{ac} (0.80)	1.05_{bc} (0.78)	244.36	<.001
In-person Parental Solicitation	3.34 (0.84)	2.33_{ab} (0.46)	3.84_{ac} (0.60)	3.40_{bc} (0.69)	131.85	<.001
Computer-mediated Parental Solicitation	1.77 (1.22)	1.63_{ab} (0.86)	2.61_{ac} (1.15)	0.90_{bc} (0.75)	89.79	<.001
Demographic Characteristics						
	n (%)	n (%)	n (%)	n (%)	χ^2	p
Gender					2.77	.25
Male	105 (35.4%)	28 (43.1%)	37 (30.8%)	37 (35.6%)		
Female	190 (64.3%)	37 (56.9%)	83 (69.2%)	67 (64.4%)		
Education					1.51	.47
Did not earn 4-year degree	138 (47.8%)	29 (44.6%)	54 (45.0%)	55 (52.9%)		
Earned 4-year degree	149 (51.6%)	35 (53.8%)	65 (54.2%)	49 (47.1%)		
Race/Ethnicity					2.10	.37
White/Caucasian	220 (76.1%)	47 (72.3%)	89 (74.2%)	84 (80.8%)		
Ethnic minority	69 (23.9%)	18 (27.7%)	31 (25.8%)	20 (19.2%)		
Marital Status					6.24	.04
Married	187 (64.7%)	38 (58.5%)	72 (60.0%)	77 (74.0%)		
Not married	102 (35.3%)	27 (41.5%)	48 (40.0%)	27 (26.0%)		

Table 13 continued

Descriptive Information about Final Three-cluster Solution

	Full sample	Moderate-moderate Cluster (n = 65)	High-high Cluster (n = 120)	High-low Cluster (n = 104)	χ^2	p
	n (%)	n (%)	n (%)	n (%)		
Geographic Area					1.66	.80
Rural	69 (23.9%)	17 (26.2%)	24 (20.0%)	28 (26.9%)		
Suburban	155 (53.6%)	34 (52.3%	68 (56.7%)	53 (51.0%)		
Urban	63 (21.8%)	14 (21.5%)	26 (21.7%)	23 (22.1%)		
Parent-child Climate						
	M (SD)	M (SD)	M (SD)	M (SD)	F	p
Parental Trust/warmth	0.72 (0.23)	0.49_{ab} (0.26)	0.70_{a} (0.27)	0.73_{b} (0.26)	18.60	<.001
Parental Control	0.66 (0.28)	0.53_{ab} (0.19)	0.78_{a} (0.21)	0.77_{b} (0.20)	38.32	<.001
Parental Knowledge						
Parental Knowledge	3.88 (0.83)	3.10_{ab} (0.82)	4.12_{a} (0.64)	4.07_{b} (0.75)	47.75	<.001
Adolescent functioning						
Internalizing	13.84 (3.57)	15.58_{ab} (3.90)	13.52_{a} (3.38)	13.13_{b} (3.22)	11.01	<.001
Externalizing	14.07 (3.73)	16.02_{ab} (3.84)	14.00_{a} (3.91)	12.92_{b} (2.87)	15.16	<.001
Prosocial	12.32 (2.28)	10.42_{ab} (2.27)	12.95_{a} (1.78)	12.79_{b} (2.16)	36.90	<.001
Substance Initiation						
	n (%)	n (%)	n (%)	n (%)	χ^2	p
Cigarettes	44 (15.22%)	14 (21.54%)	21 (17.50%)	9 (8.65%)	5.97	.05
Alcohol	106 (36.68%)	26 (40.00%)	49 (40.83%)	31 (29.81%)	3.32	.19
Marijuana	55 (19.03%)	13 (20.00%)	30 (25.00%)	12 (11.54%)	6.60	.04
Other illegal drugs	17 (5.88%)	6 (9.23%)	10 (8.33%)	1 (.01%)	7.17[a]	.03

Note. Clusters with matching subscripts are significantly different according to Tukey post-hoc tests. [a]1 cell had expected count less than 5.

Table 14

Hierarchical Multiple Regression Analyses Examining Moderating Effect of Parental Trust/warmth in Association between Cluster Membership and Parental Knowledge and Internalizing

	Parental knowledge					Internalizing				
	B	*SE B*	*β*	*t*	*ΔR²*	*B*	*SE B*	*β*	*t*	*ΔR²*
Step 1					.25***					.07***
Moderate-moderate cluster membership	-0.52	0.13	-0.26	-3.80***		0.21	0.65	0.03	0.33	
High-high cluster membership	0.04	0.09	0.03	0.42		0.50	0.44	0.07	1.14	
Step 2					.16***					.17***
Trust/warmth	1.71	0.31	0.46	5.43***		-6.20	1.53	-0.39	-4.07***	
Step 3					<.01					<.01
Moderate-moderate X trust/warmth	0.20	0.54	0.03	0.38		-3.85	2.61	-0.13	-1.48	
High-high X trust/warmth	-0.19	0.42	-0.03	-0.44		-0.66	2.06	-0.03	-0.32	
Total R^2					.41					0.23

Note. Comparison group is high-low cluster (cluster 3). *$p < .05$, **$p < .01$, ***$p < .001$.

Table 15

Hierarchical Multiple Regression Analyses Examining Moderating Effect of Parental Trust/warmth in Association between Cluster Membership and Externalizing and Prosocial Behaviors

	Externalizing					Prosocial Behaviors				
	B	*SE B*	*β*	*t*	*ΔR²*	*B*	*SE B*	*β*	*t*	*ΔR²*
Step 1					0.10***					0.21***
Moderate-moderate cluster membership	0.49	0.63	0.06	0.78		-0.86	0.36	-0.16	-2.38*	
High-high cluster membership	1.43	0.42	0.19	3.40**		0.22	0.24	0.05	0.88	
Step 2					0.23***					0.20***
Trust/warmth	-5.59	1.48	-0.34	-3.78***		5.84	0.86	0.58	6.81***	
Step 3					0.02*					.01
Moderate-moderate X trust/warmth	-6.53	2.53	-0.21	-2.58*		0.51	1.47	0.03	0.35	
High-high X trust/warmth	-4.76	1.99	-0.18	-2.39*		-2.00	1.16	0.28	0.35	
Total R^2					0.35					0.40

Note. Comparison group is high-low cluster (cluster 3). *$p < .05$, **$p < .01$, ***$p < .001$.

Table 16

Hierarchical Multiple Regression Analyses Examining Moderating Effect of Parental Control in Association between Cluster Membership and Parental Knowledge and Internalizing

	Parental knowledge					Internalizing				
	B	*SE B*	*β*	*t*	*ΔR²*	*B*	*SE B*	*β*	*t*	*ΔR²*
Step 1					0.25***					0.07***
Moderate-moderate cluster membership	-0.61	0.11	-0.30	-5.35***		1.45	0.61	0.17	2.39*	
High-high cluster membership	0.08	0.09	0.05	0.98		0.51	0.46	0.07	1.12	
Step 2					0.20***					0.03**
Parental control	1.33	0.23	0.45	5.66***		0.34	1.26	0.03	0.27	
Step 3					<.01					0.03*
Moderate-moderate X control	0.25	0.38	0.04	0.64		-6.12	2.05	-0.25	-2.99**	
High-high X control	0.02	0.31	0.01	0.06		-3.09	1.69	-0.15	-1.83	
Total R^2					0.45					0.13

Note. Comparison group is high-low cluster (cluster 3). *$p < .05$, **$p < .01$, ***$p < .001$.

Table 17

Hierarchical Multiple Regression Analyses Examining Moderating Effect of Parental Control in Association between Cluster Membership and Externalizing and Prosocial Behaviors

	Externalizing					Prosocial behaviors				
	B	*SE B*	*β*	*t*	*ΔR²*	*B*	*SE B*	*β*	*t*	*ΔR²*
Step 1					0.10***					0.21***
Moderate-moderate cluster membership	2.70	0.63	0.30	4.28***		-2.15	0.37	-0.39	-5.82***	
High-high cluster membership	1.26	0.48	0.17	2.64**		0.20	0.28	0.04	0.71	
Step 2					0.02**					0.01
Parental control	0.38	1.31	0.03	0.29		1.00	0.76	0.12	1.31	
Step 3					0.02*					<.001
Moderate-moderate X control	-2.77	2.13	-0.11	-1.30		-0.08	1.24	-0.01	-0.06	
High-high X control	-4.43	1.75	-0.21	-2.53*		-0.28	1.02	-0.02	-0.27	
Total R^2					0.14					0.20

Note. Comparison group is high-low cluster (cluster 3). *$p < .05$, **$p < .01$, ***$p < .001$.

Figure 1

Mean Report for In-person and Computer-mediated Parental Monitoring for Full Sample and Final Three Clusters

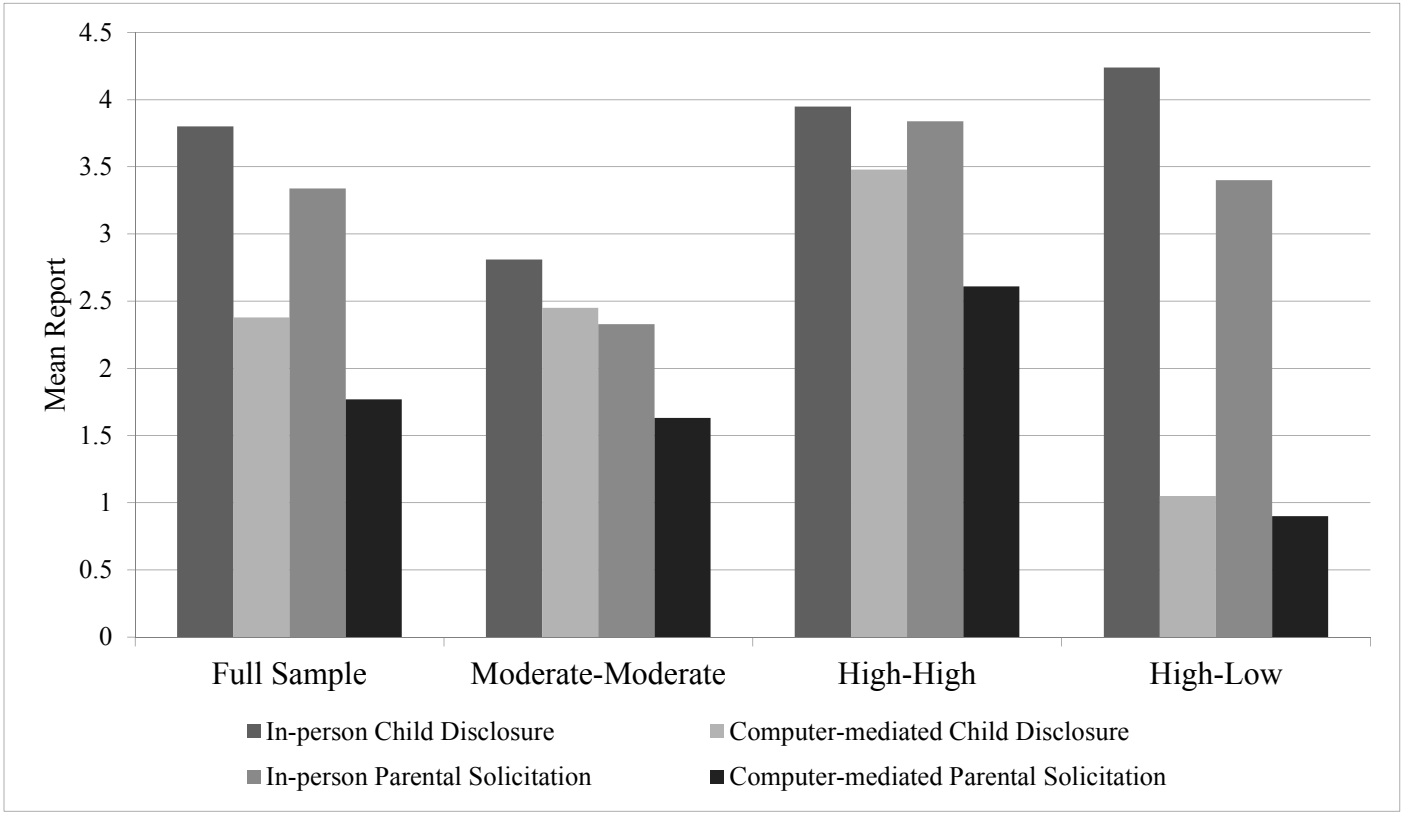


Figure 2

Interaction Effect between Cluster Membership and Parental Control for Internalizing

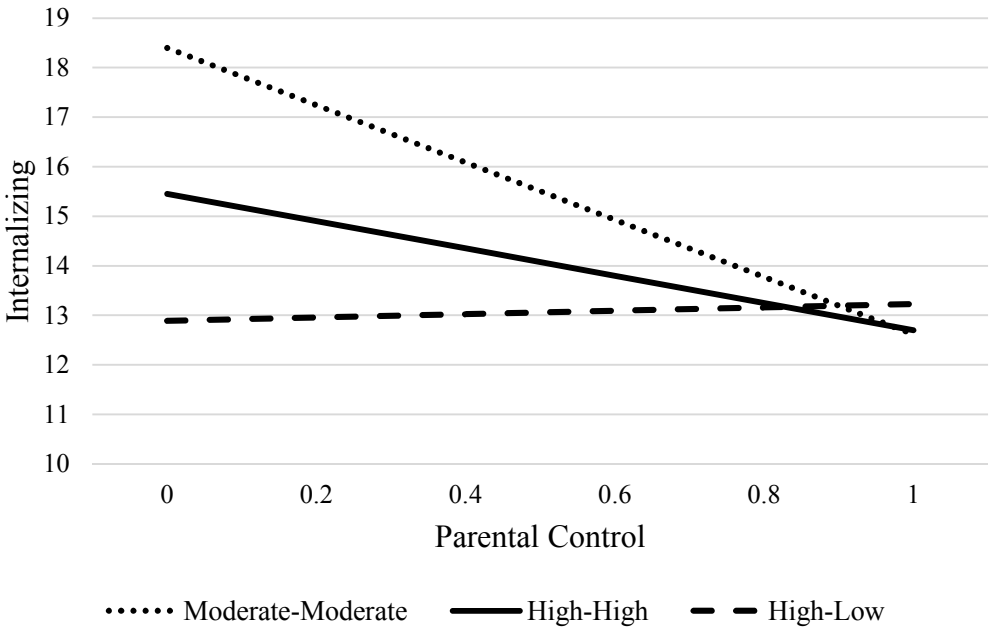


Figure 3

Interaction Effect between Cluster Membership and Parental Trust/warmth for Externalizing

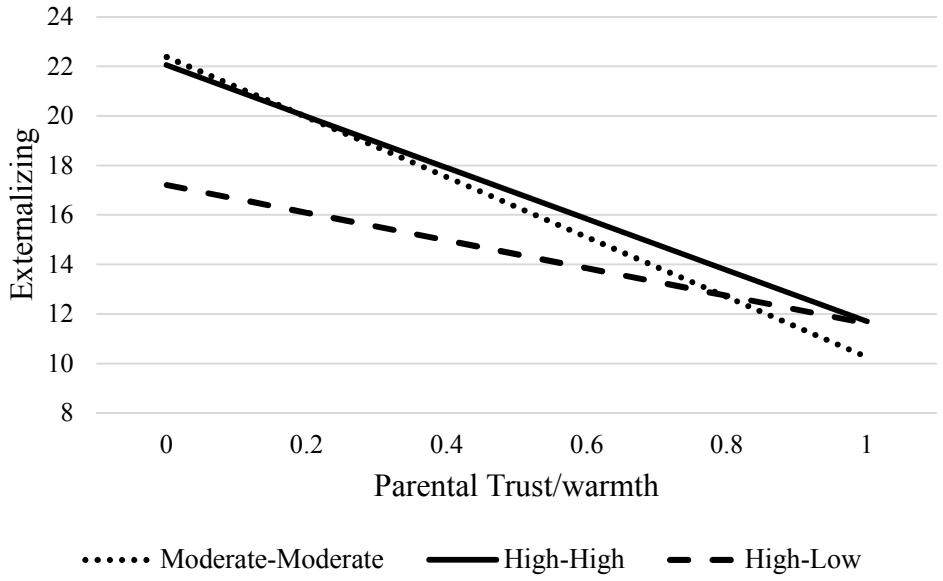
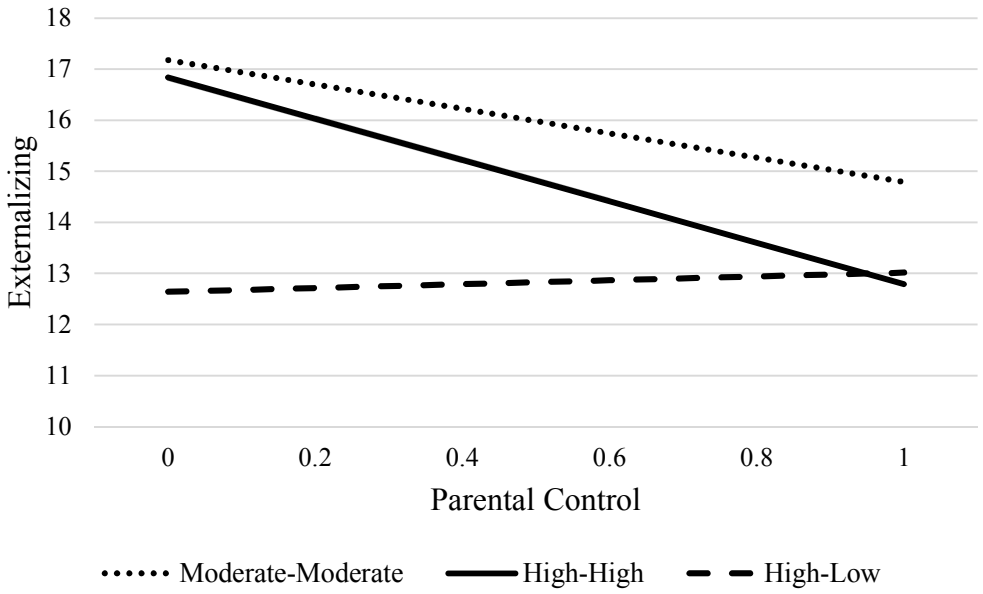


Figure 4

Interaction Effect between Cluster Membership and Parental Control for Externalizing



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Appendix I.

Youth Survey

Welcome and thank you for taking the time to participate in this University of Minnesota survey.

Please select the option that best describes you:

- I am 14-17 years old
- I am 18 years old or older
- None of the above

Welcome. You are invited to be in a study about the ways that high school/higher secondary and college/university students use technology and how parents monitor their technology use. The questions in this online survey ask about what technologies you use, how you communicate with your parents, and whether or not you participate in risky behaviors online like giving out personal information, or offline like trying alcohol.

It is your choice if you want to participate in this study. Your decision whether or not to participate will not affect your relationship with the University of Minnesota. This study has minimal risks. There is no direct benefit to participation. You may find that you do not want to answer some of the questions. You can skip any question you want and still participate. You may stop the survey at any time.

After completing the survey you will be able to enter to win an iPad mini or 1 of 2 $100 Amazon.com gift cards. We expect 200 young people to participate, and 3 of those will be winners! We plan to notify winners by mid-August, 2014.

This study is being conducted by Dr. Jodi Dworkin from the Department of Family Social Science at the University of Minnesota. The research team

will not be able to identify you. Your information will be kept private.

If you have any questions, please contact the principal investigator, Dr. Jodi Dworkin, Department of Family Social Science, University of Minnesota, Twin Cities Campus. Her phone number is (612) 624-3732 and email is jdworkin@umn.edu. If you have any questions or concerns about this study and would like to talk to someone else, you may contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street, SE, Minneapolis, MN 55455 or (612) 625-1650.

By checking YES below, you are confirming that you agree to participate in the study. If you select NO, you will not be asked to complete the survey. After checking a box, please click the >> button in the bottom right corner of this page.

Thank you for your participation!

- ○ Yes, I am under 18 and assent to participate
- ○ No, I do not want to participate in this study.

Welcome. You are invited to be in a study about the ways that high school/higher secondary and college/university students use technology and how parents monitor their technology use. The questions in this online survey ask about which technologies you use, how you communicate with your parents, and whether or not you participate in risky behaviors online like giving out personal information, or offline like trying alcohol.

Participation in this study is voluntary. You can choose to participate or not participate. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. This study has minimal risks. There is no direct benefit to participation in this study. You may find that you do not want to answer some of the questions. You may skip these questions and still participate in the survey. You may stop the survey at any time.

After completing the survey you will be able to enter to win an iPad mini or 1 of 2 $100 Amazon.com gift cards. We expect 200 young people to participate, and 3 of those will be winners! We plan to notify winners by July 15, 2014.

This study is being conducted by Dr. Jodi Dworkin from the Department of Family Social Science at the University of Minnesota. The research team will not be able to identify you individually. Your information will be kept private and stored securely.

If you have any questions, please contact the principal investigator, Dr. Jodi Dworkin, Department of Family Social Science, University of Minnesota, Twin Cities Campus. Her phone number is 612-624-3732 and email is jdworkin@umn.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you may contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street, SE, Minneapolis, MN 55455 or (612) 625-1650.

By checking YES below, you are confirming that you agree to participate in the study, if you select NO, you will not be asked to complete the survey. After checking a box, please click NEXT.

Thank you for your participation!

- ○ I am over 18 and consent to participate.
- ○ No, I do not consent to participate.

Thank you for your interest in this survey, but you are not eligible to participate at this time.

This survey will take about 15-20 minutes to complete. To move forward and back, please use the arrows at the bottom of the page (the back button in your browser will NOT work during the survey).

Please enter the last 5 digits of the cell phone number of whichever parent forwarded you the link to this survey (if this parent doesn't have a cell phone, then enter the last 5 digits of your home number)

NOTE- this will only be used as an anonymous ID code

What grade are you in school?

Where do you live during the school year?

- With parents/guardians
- On-campus housing
- Off-campus housing
- Other

Adolescent Mental Health Continuum

During the **past 30 days**, how often did you feel...

	Never	Once or Twice a Month	About Once a Week	Two or Three Times a Week	Almost Every Day	Every Day
Happy						
Interested in life						
Satisfied with life						
That you had something important to contribute to society						
That you belonged to a community (like a social group, your school, or your neighborhood)						

	Never	Once or Twice a Month	About Once a Week	Two or Three Times a Week	Almost Every Day	Every Day
That our society is a good place, or is becoming a better place, for all people						
That people are basically good						
That the way our society works made sense to you						

	Never	Once or Twice a Month	About Once a Week	Two or Three Times a Week	Almost Every Day	Every Day
That you liked most parts of your personality	○	○	○	○	○	○
Good at managing the responsibilities of your daily life	○	○	○	○	○	○
That you had warm and trusting relationships with others	○	○	○	○	○	○
That you had experiences that challenged you to grow and become a better person	○	○	○	○	○	○
Confident to think or express your own ideas and opinions	○	○	○	○	○	○
That your life has a sense of direction or meaning to it	○	○	○	○	○	○

Maternal Knowledge and Trust/Warmth

The following statements ask about your feelings about your **mother** or the person who has acted as your mother.

If you do not have someone acting as a mother in your life, select the option below and you will be directed to the next set of questions.

- ○ I do have a mother or maternal guardian
- ○ I do NOT have a mother or maternal guardian

The following statements ask about your feelings about your **mother** or the person who has acted as your mother. If you have more than one person acting as your mother (e.g. a natural mother and a step-mother) answer the questions for the one you feel has most influenced you.

Slide the grey bar to the point on the scale that best describes your relationship with your mother.

Thinking only about your relationship with your **mother**, how often does your **mother:**

Almost Never	Rarely	Sometimes	Often	Almost Always

	0	1	2	3	4	5
Know what you do during your free time?						
Know which friends you hang out with during your free time?						
Know what type of homework or class assignments you have?						
Know what you spend your money on?						
Know when you have an exam or paper due?						
Know how you are doing in different subjects at school?						
Know where you go and what you do after school or class?						
Have no idea of where you were at night?						

Please read each statement and click the answer that tells how true the statement is for you now.

	Almost				Almost

	Never or Never True	Not Often True	Sometimes True	Often True	Always or Always True
My mother trusts my judgment.	○	○	○	○	○
When we discuss things, my mother cares about my point of view.	○	○	○	○	○
I trust my mother.	○	○	○	○	○
My mother respects my feelings.	○	○	○	○	○
My mother makes me feel wanted and needed.	○	○	○	○	○
My mother lets me know she loves me.	○	○	○	○	○
My mother likes to spend time with me.	○	○	○	○	○
My mother says nice things to me when I deserve them.	○	○	○	○	○

How often do you live with your mother or maternal guardian?

- ○ All of the time or almost all of the time
- ○ Some of the time
- ○ Never

How far does your mother or maternal guardian live from you?

- ○ Less than 15 min. drive
- ○ 15-30 min. drive
- ○ 30-60 min. drive
- ○ 1-2 hr. drive
- ○ 2-4 hr. drive
- ○ Greater than 4 hr. drive

How far away do you live from your mother or maternal guardian?

- ○ Less than 15 min. drive
- ○ 15-30 min. drive
- ○ 30-60 min. drive
- ○ 1-2 hr. drive

- 2-4 hr. drive
- Greater than 4 hr. drive

Paternal Knowledge and Trust/Warmth

The following statements ask about your feelings about your **father** or the person who has acted as your father.

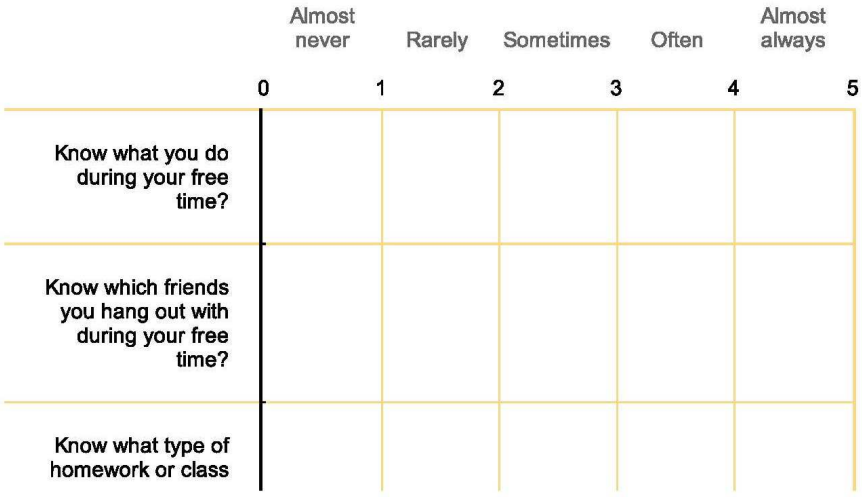
If you do not have someone acting as a father in your life, select the option below and you will be directed to the next set of questions.

- I do have a father or paternal guardian
- I do NOT have a father or paternal guardian

The following statements ask about your feelings about your **father** or the person who has acted as your father. If you have more than one person acting as your father (e.g. a natural father and a step-father) answer the questions for the one you feel has most influenced you.

Slide the grey bar to the point on the scale that best describes your relationship with your father.

Thinking only about your relationship with your **father**, how often does your **father**:



assignments you have?					
Know what you spend your money on?					
Know when you have an exam or paper due?					
Know how you are doing in different subjects at school?					
Know where you go and what you do after school or class?					
Have no idea of where you were at night?					

Please read each statement and click the answer that tells how true the statement is for you now.

	Almost Never or Never True	Not Often True	Sometimes True	Often True	Almost Always or Always True
My father trusts my judgment.	○	○	○	○	○
When we discuss things, my father cares about my point of view.	○	○	○	○	○
I trust my father.	○	○	○	○	○
My father respects my feelings.	○	○	○	○	○
My father makes me feel wanted and needed.	○	○	○	○	○
My father lets me know he loves me.	○	○	○	○	○
My father likes to spend time with me.					

My father says nice things to me when I deserve them.	○	○	○	○	○
	○	○	○	○	○

How often do you live with your father or paternal guardian?

- ○ All of the time or almost all of the time
- ○ Some of the time
- ○ Never

How far does your father or paternal guardian live from you?

- ○ Less than 15 min. drive
- ○ 15-30 min. drive
- ○ 30-60 min. drive
- ○ 1-2 hr. drive
- ○ 2-4 hr. drive
- ○ Greater than 4 hr. drive

How far away do you live from your father or paternal guardian?

- ○ Less than 15 min. drive
- ○ 15-30 min. drive
- ○ 30-60 min. drive
- ○ 1-2 hr. drive
- ○ 2-4 hr. drive
- ○ Greater than 4 hr. drive

Child Disclosure Scale

The next set of questions ask about **how often you tell your parents about different things**:

1. In person or face-to-face, and
2. Using technology to communicate when you are physically

separated, including talking on the phone, texting, e-mailing, or using Facebook or other social media.

For these questions, **please think of the parent or guardian who referred you to complete this survey.**

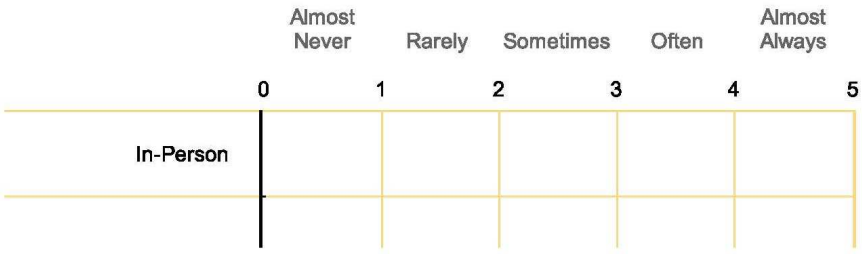
This parent is my:

- Mother or maternal guardian
- Father or paternal guardian

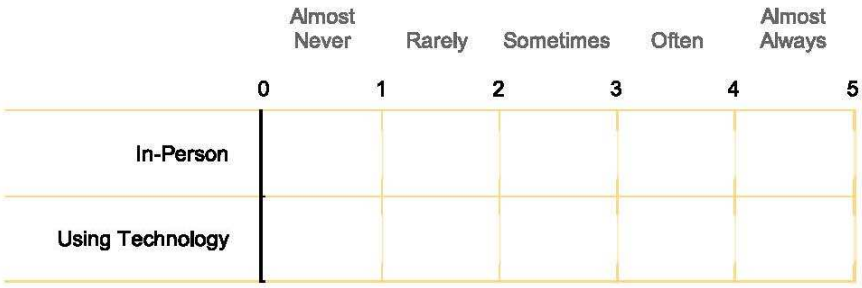
Slide the grey bar to the point on the scale that best describes your thoughts, feelings or actions.

How often do you tell this parent how you are doing in different subjects in school or class?

How often do you initiate a conversation with this parent about school (relationships with teachers, assignments, etc.)?

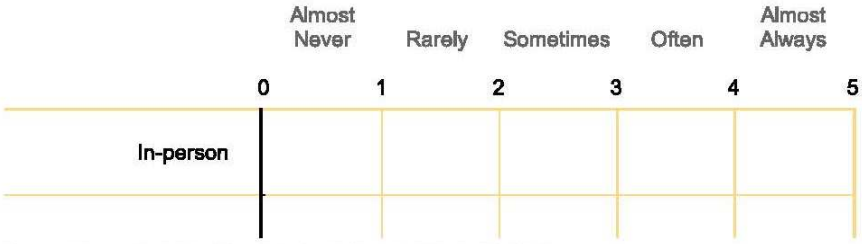


When you talk to this parent, do you keep a lot of secrets about what you do during your free time?



When you talk to this parent, do you hide a lot about what you do during nights and weekends?

If you are out at night, do you tell this parent what you have done that evening?



Using Technology

You said that you tell your parent about school, your free time or activities using technology. When you tell your parent about these things using technology, which technology do you USUALLY use?

- Phone call
- Text message
- E-mail
- Social networking site
- Skype, FaceTime, or some other video conferencing technology
- Some other technology:

Parental Solicitation Scale

The next set of questions ask about **how often your parents talk to you, your friends, and your friends' parents**:

1. In person or face-to-face, and
2. Using technology to communicate when you are physically separated, including talking on the phone, texting, e-mailing, or using Facebook or other social media.

For this question, **please think of the parent or guardian who referred you to complete this survey.**

This parent is my:

- Mother or maternal guardian
- Father or paternal guardian

Slide the grey bar to the point on the scale that best describes your thoughts, feelings, or actions.

How often does your this parent talk with the parents of your friends?

	Almost Never	Rarely	Sometimes	Often	Almost Always
	0	1	2	3	4	5
In Person					
Using Technology					

How often does this parent talk with your friends when they come to your home (ask how they're doing or what they think and feel about different things)?

	Almost Never	Rarely	Sometimes	Often	Almost Always
	0	1	2	3	4	5
In Person					
Using Technology					

During the past month, how often has this parent started a conversation with you about your free time?

	Almost Never	Rarely	Sometimes	Often	Almost Always
	0	1	2	3	4	5
In Person					
Using Technology					

How often does this parent ask you about things that happened during a normal day?

	Almost Never (0)	Rarely (1)	Sometimes (2)	Often (3)	Almost Always (4)	(5)
In Person						
Using Technology						

Does this parent usually ask you to talk about things that happened during your free time (whom you met when you were out in the city, free time activities, etc.)?

	Almost Never (0)	Rarely (1)	Sometimes (2)	Often (3)	Almost Always (4)	(5)
In Person						
Using Technology						

You said your parent starts conversations with you about your free time or activities using technology. When your parent asks you about these things using technology, which technology does your parent USUALLY use?

- ○ Phone call
- ○ Text message
- ○ E-mail
- ○ Social networking site
- ○ Skype, FaceTime, or some other video conferencing technology
- ○ Some other technology:

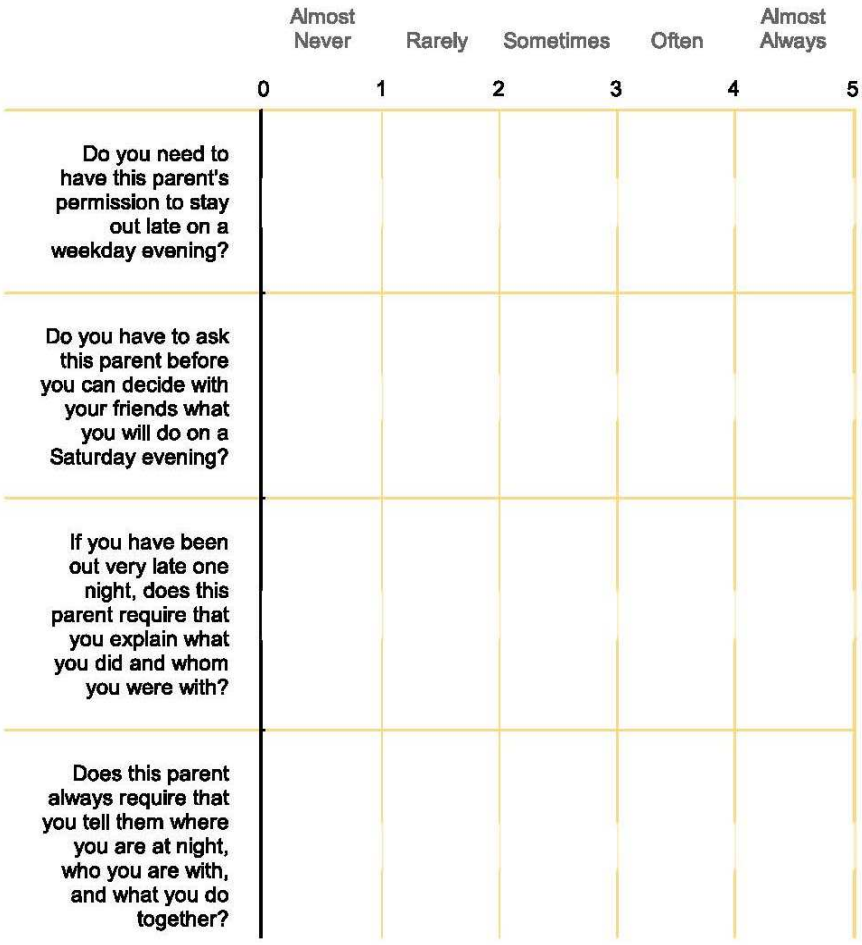
Parental Control

Please continue to think of the parent who invited you to participate in this survey for the next set of questions.

This parent is my:

- ○ Mother or maternal guardian
- ○ Father or paternal guardian

Please slide the grey bar to the point on the scale that most accurately describes your interactions with that parent.



Before you go out on a Saturday night, does this parent require you to tell them where you are going and with whom?					

SDQ

For each item, please mark the box for Not True, Somewhat True, or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain. Please give your answers on the basis of how things have been for you **over the last six months**.

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings.	○	○	○
I am restless, I cannot stay still for long.	○	○	○
I get a lot of headaches, stomachaches or sickness.	○	○	○
I usually share with others, for example music, games, food.	○	○	○
I get very angry and often lose my temper.	○	○	○
I would rather be alone than with people of my age.	○	○	○
I usually do as I am told.	○	○	○
	Not True	Somewhat True	Certainly True
I worry a lot.	○	○	○
I am helpful if someone is hurt, upset or feeling ill.	○	○	○
I am constantly fidgeting or squirming.	○	○	○
I have one good friend or more.	○	○	○
I fight a lot. I can make			

other people do what I want.			
I am often unhappy, depressed or tearful.			
Other people my age generally like me.			
	Not True	Somewhat True	Certainly True
I am easily distracted, I find it difficult to concentrate.			
I am nervous in new situations. I easily lose confidence.			
I am kind to younger children.			
I am often accused of lying or cheating.			
Other children or young people pick on me or bully me.			
I often offer to help others (parents, teachers, children).			
I think before I do things.			
	Not True	Somewhat True	Certainly True
I take things that are not mine from home, school or elsewhere.			
I get along better with adults than with people my own age.			
I have many fears, I am easily scared.			
I finish the work I'm doing. My attention is good.			

Zuckerman Sensation Seeking Scale- Form V

Directions: Each of the items below contains two choices: A and B. Please indicate which of the choices most describes your likes or the way you feel. If both apply to you, please choose the one which better describes your likes or feelings.

- A. I like "wild" uninhibited parties.
- B. I prefer quiet parties with good conversation.

- A. There are some movies I enjoy seeing a second or even third time.
- B. I can't stand watching a movie that I've seen before.

- A. I often wish I could be a mountain climber.
- B. I can't understand people who risk their necks climbing mountains.

- A. I dislike all body odors.
- B. I like some of the earthy body smells.

- A. I get bored seeing the same old faces.
- B. I like the comfortable familiarity of everyday friends.

- A. I like to explore a strange city or section of town by myself, even if it means getting lost.
- B. I prefer a guide when I am in a place I don't know well.

- B. I enjoy the company of real "swingers".

- A. I find that stimulants make me uncomfortable.
- B. I often like to get high (drinking liquor or smoking marijuana).

- A. I like to try new foods that I have never tasted before.
- B. I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.

- A. I enjoy looking at home movies, videos, or travel slides.
- B. Looking at someone's home movies, videos, or travel slides bores me tremendously.

- A. I would like to take up the sport of water skiing.
- B. I would not like to take up water skiing.

- A. I would like to try surfboard riding.
- B. I would not like to try surfboard riding.

- A. I would like to take off on a trip with no preplanned or definite routes, or timetable.
- B. When I go on a trip, I like to plan my route and timetable fairly

carefully.

- A. I prefer "down to earth" kinds of people as friends.
- B. I would like to make friends in some of the "far-out" groups like artists or "punks".

- A. I would not like to learn to fly an airplane.
- B. I would like to learn to fly an airplane.

- A. I prefer the surface of the water to the depths.
- B. I would like to go scuba diving.

- A. I would like to meet some persons who are homosexual (men or women).
- B. I stay away from anyone I suspect of being gay or lesbian.

- A. I would like to try parachute jumping.
- B. I would never want to try jumping out of a plane, with or without a parachute.

- A. I prefer friends who are excitingly unpredictable.
- B. I prefer friends who are reliable and predictable.

- A. I am not interested in experience for its own sake.
- B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.

- A. The essence of good art is in its clarity, symmetry of form, and harmony of colors.
- B. I often find beauty in the "clashing" colors and irregular forms of modern paintings.

- A. I enjoy spending time in the familiar surroundings of home.
- B. I get very restless if I have to stay around home for any length of time.

- A. I like to dive off the high board.
- B. I don't like the feeling I get standing on the high board (or I don't go near it at all).

- A. I like to date persons who are physically exciting.
- B. I like to date persons who share my values.

- A. Heavy drinking usually ruins a party because some people get loud and boisterous.
-

B. Keeping the drinks full is the key to a good party.

- A. The worst social sin is to be rude.
- B. The worst social sin is to be a bore.

- A. A person should have considerable sexual experience before marriage.
- B. It's better if two married persons begin their sexual experience with each other.

- A. Even if I had the money, I would not care to associate with flighty rich persons in the "jet set".
- B. I could conceive of myself seeking pleasures around the world with the "jet set".

- A. I like people who are sharp and witty even if they do sometimes insult others.
- B. I dislike people who have their fun at the expense of hurting the feelings of others.

- A. There is altogether too much portrayal of sex in movies.
- B. I enjoy watching many of the "sexy" scenes in movies.

- A. I feel best after taking a couple of drinks.
- B. Something is wrong with people who need liquor to feel good.

- A. People should dress according to some standard of taste, neatness, and style.
- B. People should dress in individual ways even if the effects are sometimes strange.

- A. Sailing long distances in small sailing crafts is foolhardy.
- B. I would like to sail a long distance in a small but seaworthy sailing craft.

- A. I have no patience with dull or boring persons.
- B. I find something interesting in almost every person I talk to.

- A. Skiing down a high mountain slope is a good way to end up on crutches.
- B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.

PEW: Online risk-taking behaviors

Choose the answer, No or Yes, that best describes your actions online for the following questions

	No	Yes
Have you ever said you were older than you are so you could get onto a web site or sign up for an online account, such as for email or a social networking site?	○	○

Have you ever shared one of your passwords with a friend or a boyfriend or girlfriend?	○	○
Have you ever been contacted by a stranger online that had no connection to you or any of your friends?	○	○
Thinking about the last time you were contacted online by someone who was a complete stranger to you, did you tell an adult or an authority figure?	○	○
In the past 12 months, have you RECEIVED nasty or hurtful messages on the Internet?	○	○
	No	Yes
In the past 12 months, have you SENT nasty or hurtful messages on the Internet?	○	○
Have you ever sent a sexually suggestive nude or nearly nude photo or video of yourself to someone else online?	○	○
Have you ever received a sexually suggestive nude or nearly nude photo or video of someone else you know online?	○	○
Have you ever shared sensitive information online that later caused a problem for you or others in your family?	○	○
Have you ever posted something online that got you in trouble at school?	○	○
	No	Yes
Have you ever received online advertising that was clearly inappropriate for your age?	○	○
Have you ever been contacted online by someone you did not know in a way that made you feel scared or uncomfortable?	○	○
Have you ever gone on to meet anyone face to face that you met on the Internet?	○	○
Have you ever met someone online who became a good friend?	○	○

Life Threatening Events

For each item, please mark the box for No or Yes. It would help us if you answered all items as best you can even if you are not absolutely certain . Please give your answers on the basis of how things have been for you **over the last 6 months.**

	No	Yes
In the last 6 months, have you experienced a serious illness, injury, or assault to yourself?	○	○
In the last 6 months, have you experienced a serious illness, injury, or assault to a close relative?	○	○
In the last 6 months, have you experienced the death of a parent?	○	○
In the last 6 months, have you experienced the death of a close friend or other relative?	○	○

In the last 6 months, have you broken off a steady relationship?	○	○
In the last 6 months, has a close friend, neighbor, or relative dealt with a serious problem?	○	○
In the last 6 months, have you been fired from a job?	○	○
In the last 6 months, has your family experienced a major financial crisis?	○	○
In the last 6 months, have you experienced problems with police or had to make a court appearance?	○	○
In the last 6 months, have you had something valuable lost or stolen?	○	○

National Youth Risk Behaviors Survey (YRBS)

How old were you when you smoked a whole cigarette for the first time?

▼

Have you ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days?

- ○ Yes
- ○ No

Have you ever smoked an e-cigarette (electronic cigarette)?

- ○ Yes
- ○ No

During the past 30 days, on how many days did you smoke an e-cigarette?

- ○ 1 days
- ○ 2 day
- ○ 3 to 5 days
- ○ 6 to 9 days
- ○ 10 to 19 days
- ○ 20 or more days

During your life, on how many days have you had at least one drink of

alcohol?

- 0 days
- 1 or 2 days
- 3 to 9 days
- 10 to 19 days
- 20 to 39 days
- 40 to 99 days
- 100 or more days

During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

- 0 days
- 1 day
- 2 days
- 3 to 5 days
- 6 to 9 days
- 10 to 19 days
- 20 or more days

During your life, how many times have you used marijuana?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 or more times

During your life, how many times have you tried any other illegal drugs (e.g. Ecstasy, Cocaine, etc.) or mis-used prescription drugs (e.g. Adderall,

Vicodin, Percocet)?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 or more times

Demographics

Now we'd like to ask you about how you use technology. How often do you do each of the following activities **ONLINE**?

	Never	Less than once a month	Monthly	Weekly	Once a day	Several times a day
Read news, current events, or check what's going on in your area online (movie times, events, etc.)						
Use online tools for monitoring, organizing or managing information (school information, calendar, banking, etc.)						
Look for general information (health and wellness, ideas for activities, research a topic)						
Play games online						
Audio conference or make phone calls using the Internet (e.g. Skype)						
Use webcam or video conference (e.g. Facetime)						
	Never	Less than once a month	Monthly	Weekly	Once a day	Several times a day
Use instant messaging (AIM, MSN messenger, Yahoo! chat, etc.)						
Send or receive text messages (SMS)						

Post on or read discussion boards or chat rooms	○	○	○	○	○	○
Send or read e-mail	○	○	○	○	○	○
Read emailed newsletters (newsletters from school, 4-H)	○	○	○	○	○	○
Send or receive photos	○	○	○	○	○	○

	Never	Less than once a month	Monthly	Weekly	Once a day	Several times a day
Listen to, create, or share audio files online	○	○	○	○	○	○
Watch, create, or share video files online (movies, TV, home videos)	○	○	○	○	○	○
Read or comment on blogs	○	○	○	○	○	○
Create, maintain, or write blogs	○	○	○	○	○	○
Create, maintain, or follow microblogs (Twitter)	○	○	○	○	○	○
Create or maintain a website	○	○	○	○	○	○

	Never	Less than once a month	Monthly	Weekly	Once a day	Several times a day
Use social networking sites (Facebook, Pinterest, etc.)	○	○	○	○	○	○
Participate in online classes, workshops, or webinars	○	○	○	○	○	○
Other	○	○	○	○	○	○

How old are you?

▼

What is your gender?

- ○ Male
- ○ Female

What is your race?

○

American Indian or Alaska Native

- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White or Caucasian
- Hispanic or Latin American
- Mixed Race
- Don't know or Prefer not to answer
- Other (please specify):

What is your current grade point average or percentage marks?

Have you ever been suspended from school?

- Yes
- No

Do you receive free or reduced lunch at school?

- Yes
- No

What is your parents' marital status?

- Divorced or separated
- Married
- Never married
- Widowed
- Living together but not married

How would you describe the area where you live?

- Rural
- Suburban
- Urban

If you live in the United State, in which state do you currently reside?

If you do not live in the United States, what country do you live in?

How did you hear about this survey?

- Facebook ad or page
- Email list
- From a parent or friend
- Other

Appendix II.

Parent Survey

Parent Survey

Welcome. You are invited to be in a study about the ways that parents of high school and college students use the Internet and other technologies for parenting.

Please select the option that best describes you:

- I am the parent of a high school/higher secondary or college/university student
- I am NOT the parent of a high school/higher secondary or college/university student

Welcome. You are invited to be in a study about the ways that parents of high school and college students use the Internet and other technologies for parenting. The questions in this online survey ask about how you monitor your children's technology use, how you communicate with your children, and your children's risk-taking behavior.

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. This study has minimal risks. You may find that you do not want to answer some of the questions. You may skip these questions. You may stop the survey at any time. If you choose to participate, after completing the survey you will be asked whether you would like your child to participate in this study as well. By forwarding the link at the end of the survey to your child, you are providing consent for your child to participate if he/she is under 18. Your child will be asked questions similar to those asked of you, for example, "On how many days have you had at least one drink of alcohol?" And "In the last 6 months, have you experienced a serious illness, injury or assault?"

After completing the survey, you can choose to be entered into

a drawing to receive an iPad mini or 1 of 2 $100 gift cards to Amazon.com, as well as give your child a chance to be entered into the drawing. We expect 200 parents to participate, and 3 of those will be winners! We plan to notify winners by mid-August. You can enter the drawing regardless of whether or not your child participates.

This study is being conducted by Dr. Jodi Dworkin from the Department of Family Social Science at the University of Minnesota. The research team will not have access to information that would allow them to identify specific individuals in the data. These data will be kept private and stored securely. There are no direct benefits to you from participation in the study.

If you have any questions, please contact the principal investigator, Dr. Jodi Dworkin, Department of Family Social Science, University of Minnesota, Twin Cities Campus. Her phone number is 612-624-3732 and email is jdworkin@umn.edu. If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, you may contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware Street, SE, Minneapolis, MN 55455 or (612) 625-1650.

By checking YES below, you are confirming that you give consent to participate in the study. After checking the box, please click >>, and you will be directed to begin the survey. If you select NO, you will not be asked to complete the survey.

Thank you for your participation!

- ○ I consent to participate
- ○ I do NOT consent to participate

Thank you for your interest in our study, but you are not eligible to participate at this time.

This survey will take about 15-20 minutes to complete. To move forward and back, please use the arrows at the bottom of the page (the back button in your browser will NOT work during the survey).

What are the last 5 digits of your cell phone number (if no cell, then the last 5 digits of your home phone)?

NOTE- this will only be used as an anonymous ID code

How old are each of your children?

	Please type in the AGE for each of your children	What is your child's gender?
1st Child		
2nd Child		
3rd Child		
4th Child		
5th Child		
6th Child		

Who is your youngest child that is in high school/higher secondary or college/university?

Throughout the survey, you will be asked to answer questions specifically about your relationship with this child.

	Child's First Name	Child's Age	Chilc Gend
The child I will be answering the survey questions about			

Relationship with Child

Listed below are statements that involve personal beliefs about your relationship with ${q://QID90%233/ChoiceTextEntryValue/1/1} ....

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
What I do has little effect on my child's behavior.	○	○	○	○	○
When something goes wrong between me and my child, there is little I can do to correct it.	○	○	○	○	○
Parents should address problems with their children because ignoring them won't make them go away.	○	○	○	○	○
If your child loses his/her temper, no matter what you try, you might as well give up.	○	○	○	○	○
No matter how hard a parent tries, some children will never learn to mind.	○	○	○	○	○
I am often able to predict my child's behavior in situations.	○	○	○	○	○

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
There is no such thing as good or bad children - just good or bad parents.	○	○	○	○	○
When my child is well-behaved, it is because he/she is responding to my efforts.	○	○	○	○	○
Parent who can't get their children to listen to them don't understand how to get along with their children.	○	○	○	○	○
My child's behavior problems are no one's fault but my own.	○	○	○	○	○
Capable people who fail to become good parents have not followed through on their opportunities.	○	○	○	○	○
Children's behavior problems are often due to mistakes their parents made.	○	○	○	○	○

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
My life is chiefly controlled by my child.	○	○	○	○	○
My child does not control my life.	○	○	○	○	○
My child influences the number of friends I have.	○	○	○	○	○
To show you are paying attention, please select somewhat disagree	○	○	○	○	○
I feel like what happens in my life is mostly					

	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree
determined by my child.	○	○	○	○	○
It is easy for me to avoid and function independently of my child's attempt to have control over me.	○	○	○	○	○
I always feel in control when it comes to my child.	○	○	○	○	○
My child's behavior is sometimes more than I can handle.	○	○	○	○	○
It is often easier to let my child have his/her way than to put up with a fit.	○	○	○	○	○
I find that sometimes my child can get me to do things I really do not want to do.	○	○	○	○	○
My child often behaves in a manner very different from the way I would want him/her to behave.	○	○	○	○	○

Parental Knowledge and Parental Trust/Warmth

The following statements ask about your feelings about ${q://QID90%233/ChoiceTextEntryValue/1/1}. For each of the following questions, please slide the grey bar to the point on the scale that best describe your thoughts or feelings about ${q://QID90%233/ChoiceTextEntryValue/1/

	Almost Never	Rarely	Sometimes	Often	Almost Always
	0	1	2	3	4 5
Do you know what your child does during his or her free time?					
Do you know which friends your child hangs out with during his or her free time?					
Do you usually know what type of homework or class assignments ${q://QID90%233/ChoiceTextEntryValue/1/1} has?					
Do you know what your child spends his or					

her money on?					
Do you usually know when ${q://QID90%233/ChoiceTextEntryValue/1/1} has an exam or paper due?					
Do you normally know where your child goes and what he or she does after school or class?					

For each of the following questions, please select the option that best describes your thoughts or feelings about ${q://QID90%233/ChoiceTextEntryValue/1/1}.

	Almost Never or Never True	Not Very Often True	Sometimes True	Often True	Almost Always or Always True
I trust ${q://QID90%233/ChoiceTextEntryValue/1/1}'s judgment.					
When we discuss things, I care about my child's point of view.					
My child trusts me.					
I respect ${q://QID90%233/ChoiceTextEntryValue/1/1}'s feelings.					
I let my child know I love him or her.					
I say nice things to my child when he or she deserves them.					
I make my child feel wanted and needed.					
I like to spend time with ${q://QID90%233/ChoiceTextEntryValue/1/1}.					

Child Disclosure Scale (for Parents)

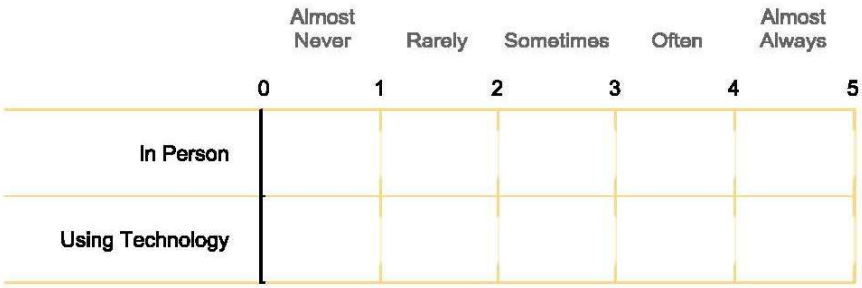
The next set of questions ask about **how often ${q://QID90%233/ChoiceTextEntryValue/1/1} tells you about different things:**

1. In person or face-to-face, and
2. Using technology to communicate when you are physically separated, including talking on the phone, texting, e-mailing, or using Facebook or other social media.

Please slide the grey bar to the point on the scale that best describes your thoughts or feelings about ${q://QID90%233/ChoiceTextEntryValue/1/1}.

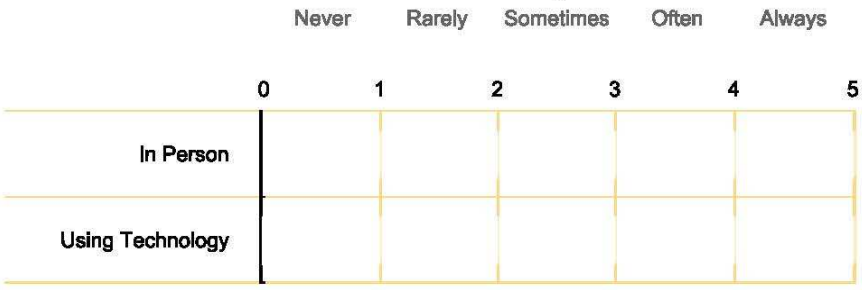
How often does your child tell you about how he or she is doing in school or class?

How often does your child initiate a conversation with you about school or classes (relationships with teachers, assignments, etc.)

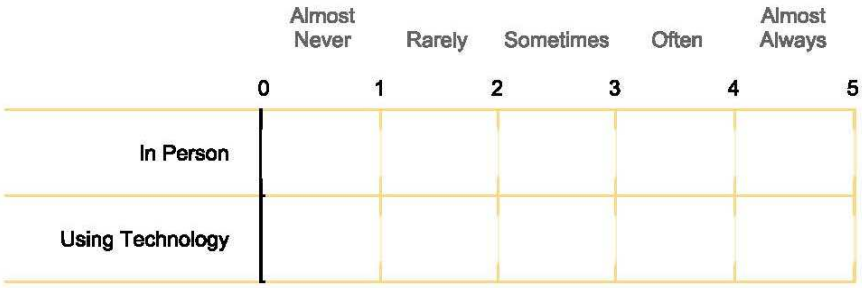


When you talk to your child, does your child keep a lot of secrets from you about what he or she does during free time?

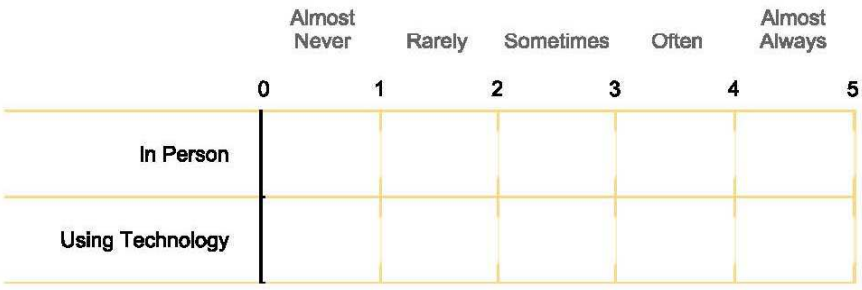
Almost Almost



When you talk to your child, does he/she hide a lot from you about what he/she does during nights and weekends?



When your child has been out in the evening, does he or she tell you what he or she has done that evening?



You said that your child tells you about school, free time, or activities using technology. When your child tells you these things using technology, which technology does he or she USUALLY use?

- ○ Phone call
- ○ Text message
- ○ E-mail
- ○ Social networking site
- ○ Skype, FaceTime, or some other video conferencing technology
- ○ Some other technology:

Parental Solicitation Scale NEW

The next set of questions ask about **how often you communicate with ${q://QID90%233/ChoiceTextEntryValue/1/1} and others about different things:**

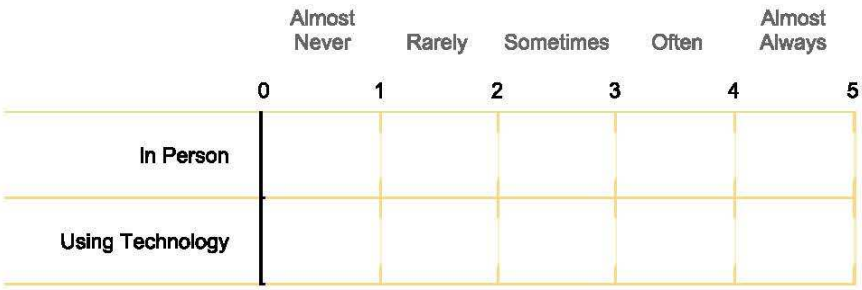
1. In person or face-to-face, and
2. Using technology to communicate when you are physically separated, including talking on the phone, texting, e-mailing, or using Facebook or other social media.

Please slide the grey bar to the point on the scale that best describes your thoughts or feelings about ${q://QID90%233/ChoiceTextEntryValue/1/1}.

In the last month, have you talked to the parents of your child's friends?

	Almost Never	Rarely	Sometimes	Often	Almost Always
	0	1	2	3	4 5
In Person					
Using Technology					

How often do you talk with ${q://QID90%233/ChoiceTextEntryValue/1/1}'s friends (ask what they do or what they think and feel about different things)?



During the past month, how often have you started a conversation with your child about his or her free time?

How often do you ask your child about things that happened during a normal day?

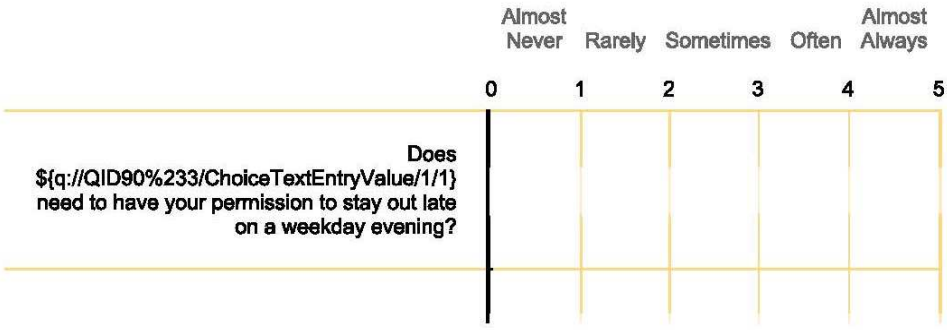
Do you usually ask your child to talk about things that happened during his or her free time (whom he or she met when they were out in the city, free time activities, etc.)?

You said that you start conversations with your child about free time or talk with your child's friends using technology. When you use these technologies to start a conversation with your child, which technology do you USUALLY use?

- Phone call
- Text message
- E-mail
- Social networking site
- Skype, FaceTime, or some other video conferencing technology
- Some other technology:

Parental Control

For each of the following questions, please slide the grey bar to the point on th scale that best represents how often you do these things for ${q://QID90%233/ChoiceTextEntryValue/1/1}.



Does your child have to ask you before he or she can decide with friends what they will do on a Saturday evening?					
If your child has been out very late one night, do you require that your child explain what he or she did and who he or she was with?					
Do you always require that ${q://QID90%233/ChoiceTextEntryValue/1/1} tell you where he or she is at night, who he or she is with, and what they do together?					
To demonstrate that you are paying attention, please slide the slider to 4.					
Before your child goes out on a Saturday night, do you require your child to tell you where he or she is going and with whom?					

Parental Monitoring of Child's Online Behavior

Still thinking about ${q://QID90%233/ChoiceTextEntryValue/1/1}'s use of technology, have you ever:

	No	Yes
Read a privacy policy for a website or social network site your child was using?	○	○
Searched for your child's name online to see what information is available about them?	○	○
Used parental controls or other means of blocking, filtering or monitoring your child's online activities?	○	○
Helped your child set up privacy settings for a social network site?	○	○
Talked with your child because you were concerned about something posted to their profile or account?	○	○
Commented or responded directly to something posted on your child's social network profile or account?	○	○

Life Events

For each item, please mark the box for No or Yes. It would help us if you answered all items as best you can even if you are not absolutely certain . Please give your answers on the basis of how things have been for you **over the last 6 months**.

	No	Yes
In the last 6 months, have you experienced a serious illness, injury, or assault to yourself?	○	○
In the last 6 months, have you experienced a serious illness, injury, or assault to a close relative?	○	○
In the last 6 months, have you experienced the death of a parent, child, or spouse?	○	○
In the last 6 months, have you experienced the death of a close friend or other relative?	○	○
In the last 6 months, have you experienced a separation due to marital problems?	○	○
In the last 6 months, have you broken off a steady relationship?	○	○
In the last 6 months, has a close friend, neighbor, or relative dealt with a serious problem?	○	○
In the last 6 months, have you been seeking work and/or become unemployed?	○	○
In the last 6 months, have you been fired from a job?	○	○
In the last 6 months, have you experienced a major financial crisis?	○	○
In the last 6 months, have you experienced problems with police or had to make a court appearance?	○	○
In the last 6 months, have you had something valuable lost or stolen?	○	○

SDQ (Adult Informant Version)

Please give your answers on the basis of ${q://QID90%233/ChoiceTextEntryValue/1/1}'s behavior **over the last six months**. Your choices are Not True, Somewhat True, or Certainly True.

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings.	○	○	○
Restless or cannot stay still for long.	○	○	○
Often complains of unreal or imagined illness.	○	○	○
Shares readily with other youths.	○	○	○
Often loses temper.	○	○	○
Would rather be alone than with other youths.	○	○	○
Generally well behaved and usually does what adults request.	○	○	○
	Not True	Somewhat True	Certainly True

Many worries or often seems worried.	○	○	○
Helpful if someone is hurt, upset or feeling ill.	○	○	○
Constantly fidgeting or squirming.	○	○	○
Has at least one good friend.	○	○	○
Often fights with other youths or bullies them.	○	○	○
Often seems unhappy or depressed	○	○	○
Generally liked by other youths.	○	○	○

	Not True	Somewhat True	Certainly True
Easily distracted, or their concentration wanders.	○	○	○
Nervous in new situations, easily loses confidence.	○	○	○
Kind to younger children.	○	○	○
Often lies OR cheats.	○	○	○
Picked on or bullied BY other youths.	○	○	○
Often offers to help others (parents, teachers, children).	○	○	○
Thinks things out before acting.	○	○	○

	Not True	Somewhat True	Certainly True
Steals from home, school or elsewhere.	○	○	○
Gets along better with adults than with other youths.	○	○	○
Has many fears and is easily scared.	○	○	○
Good attention span and sees work through to the end.	○	○	○

Social Support

For the following questions, please indicate how much you agree or disagree:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
There are several people I trust to help solve my problems.	○	○	○	○	○
There is someone I can turn to for advice about making very important decisions.	○	○	○	○	○
If I needed an emergency loan of $500, I know someone I can turn to.	○	○	○	○	○
The people I interact with would be good job references for me.	○	○	○	○	○

I do not know people well enough to get them to do anything important.	○	○	○	○	○

For the following questions, please indicate how much you agree or disagree:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Interacting with people online makes me want to try new things.	○	○	○	○	○
Interacting with people online makes me feel like part of a larger community.	○	○	○	○	○
Interacting with people online reminds me that everyone in the world is connected.	○	○	○	○	○
I am willing to spend time to support general online community activities.	○	○	○	○	○
Online, I come in contact with new people all the time.	○	○	○	○	○

YRBS (National Youth Risk Behaviors) questions for Parents

To the best of your knowledge, how old was ${q://QID90%233/ChoiceTextEntryValue/1/1} when he/she smoked a whole cigarette for the first time?

▼

Has ${q://QID90%233/ChoiceTextEntryValue/1/1} ever smoked cigarettes daily, that is, at least one cigarette every day for 30 days?

- ○ No
- ○ Yes

Has ${q://QID90%233/ChoiceTextEntryValue/1/1} ever smoked an e-cigarette (electronic cigarette)?

- No
- Yes

To the best of your knowledge, in ${q://QID90%233/ChoiceTextEntryValue/1/1}'s life, on how many days do you think he/she has had at least one drink of alcohol?

- 0 days
- 1 or 2 days
- 3 to 9 days
- 10 to 19 days
- 20 to 39 days
- 40 to 99 days
- 100 or more days

To demonstrate that you are reading the questions, please select Yes below.

- Yes
- No
- Sometimes

To the best of your knowledge, in the past 30 days, on how many days did ${q://QID90%233/ChoiceTextEntryValue/1/1} have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

- 0 days
- 1 day
- 2 days
- 3 to 5 days
- 6 to 9 days
- 10 to 19 days
- 20 or more days

To the best of your knowledge, in ${q://QID90%233/ChoiceTextEntryValue/1/1}'s life, how many times has he/she used marijuana?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 or more times

To the best of your knowledge, in ${q://QID90%233/ChoiceTextEntryValue/1/1}'s life, how many times has your he/she tried any other illegal drugs (i.e. Ecstasy, Cocaine, etc.) or misused prescription drugs (e.g. Adderall, Vicodin, Percocet)?

- 0 times
- 1 or 2 times
- 3 to 9 times
- 10 to 19 times
- 20 to 39 times
- 40 to 99 times
- 100 or more times

Demographics

Now we'd like to ask you about how you use technology. In general, how often do you do each of the following activities?

	Never	Less Than Once a Month	Monthly	Weekly	Once a Day	Several Times a Day
Read news, current events, or check what's going on in your area online (movie times,						

events, etc.)						
Use online tools for monitoring, organizing or managing information (school information, calendar, banking, etc.)	○	○	○	○	○	○
Look for general information (health and wellness, ideas for activities, research a topic)	○	○	○	○	○	○
Play games online	○	○	○	○	○	○
Audio conference or make phone calls using the Internet (e.g. Skype)	○	○	○	○	○	○
Use webcam or video conference (e.g. Facetime)	○	○	○	○	○	○

	Never	Less Than Once a Month	Monthly	Weekly	Once a Day	Several Times a Day
Use instant messaging (AIM, MSN messenger, Yahoo! chat, etc.)	○	○	○	○	○	○
Send or receive text messages (SMS)	○	○	○	○	○	○
Post on or read discussion boards or chat rooms	○	○	○	○	○	○
Send or read e-mail	○	○	○	○	○	○
Read emailed newsletters (newsletters from school, 4-H)	○	○	○	○	○	○
Send or receive photos	○	○	○	○	○	○

	Never	Less Than Once a Month	Monthly	Weekly	Once a Day	Several Times a Day
Listen to, create, or share audio files online	○	○	○	○	○	○
Watch, create, or share video files online (movies, TV, home videos)	○	○	○	○	○	○
Read or comment on blogs	○	○	○	○	○	○
Create, maintain, or write blogs	○	○	○	○	○	○
Create, maintain, or follow microblogs (Twitter)	○	○	○	○	○	○
Create or maintain a website	○	○	○	○	○	○

		Less Than Once			Once	Several Times a

	Never	a Month	Monthly	Weekly	a Day	Day
Use social networking sites (Facebook, Pinterest, Cafemom, etc.)	○	○	○	○	○	○
Participate in online classes, workshops, or webinars	○	○	○	○	○	○
Other	○	○	○	○	○	○

How old are you?

What is your gender?

- ○ Male
- ○ Female

What is your race?

- ○ American Indian or Alaska Native
- ○ Asian
- ○ Black or African American
- ○ Native Hawaiian or Other Pacific Islander
- ○ White or Caucasian
- ○ Hispanic or Latin American
- ○ Mixed Race
- ○ Don't know or Prefer not to answer
- ○ Other (please specify):

What is the last grade you completed in school?

- ○ Less than high school/higher secondary
- ○ High school/higher secondary graduate (grade 12 or GED

certificate)

- Business, technical, or vocational school AFTER high school
- Some college/university, no 4 year degree
- College/university graduate (B.S., B.A., or other 4-year degree)
- Post-graduate training/professional school/Master's/PhD, M.D., Law degree
- Don't know or Prefer not to answer

Last year, what was your total family income from all sources, before taxes?

- Less than $10,000
- $10,000 - under $20,000
- $20,000 - under $30,000
- $30,000 - under $40,000
- $40,000 - under $50,000
- $50,000 - under $75,000
- $75,000 - under $100,000
- $100,000 or more
- Don't know or Prefer not to answer
- If you live outside the United States, please estimate your annual income in rupees or dollars:

What is your employment status?

- Employed part-time
- Employed full-time
- Do not work outside the home
- Unemployed, looking for work
- Other (please specify):

What is your marital status?

- Divorced or separated
- Living with partner
- Married
- Single
- Widowed

How would you describe the area where you live?

- Rural
- Suburban
- Urban

If you live in the United States, in which state do you currently reside?

If you live outside the United States, what country do you live in?

How many persons are living in your house?

Are you or your partner expecting a child?

- No
- Yes

How did you hear about this survey?

- Facebook ad or page

- ○ Amazon Mechanical Turk (MTurk)
- ○ Email list
- ○ From your spouse or a friend
- ○ Other (please specify):

MTurk page

If you are using Amazon Mechanical Turk (MTurk), your validation code is ${e://Field/mTurkCode}. To receive payment for participation, click "Accept HIT" in the Mechanical Turk window, enter this validation code, then click "Submit".

After entering the code, click "Submit" on this survey to be entered into an additional drawing for an iPad mini and $100 Amazon.com gift cards.

If you are not using MTurk, click "Submit' to be entered into an additional drawing.